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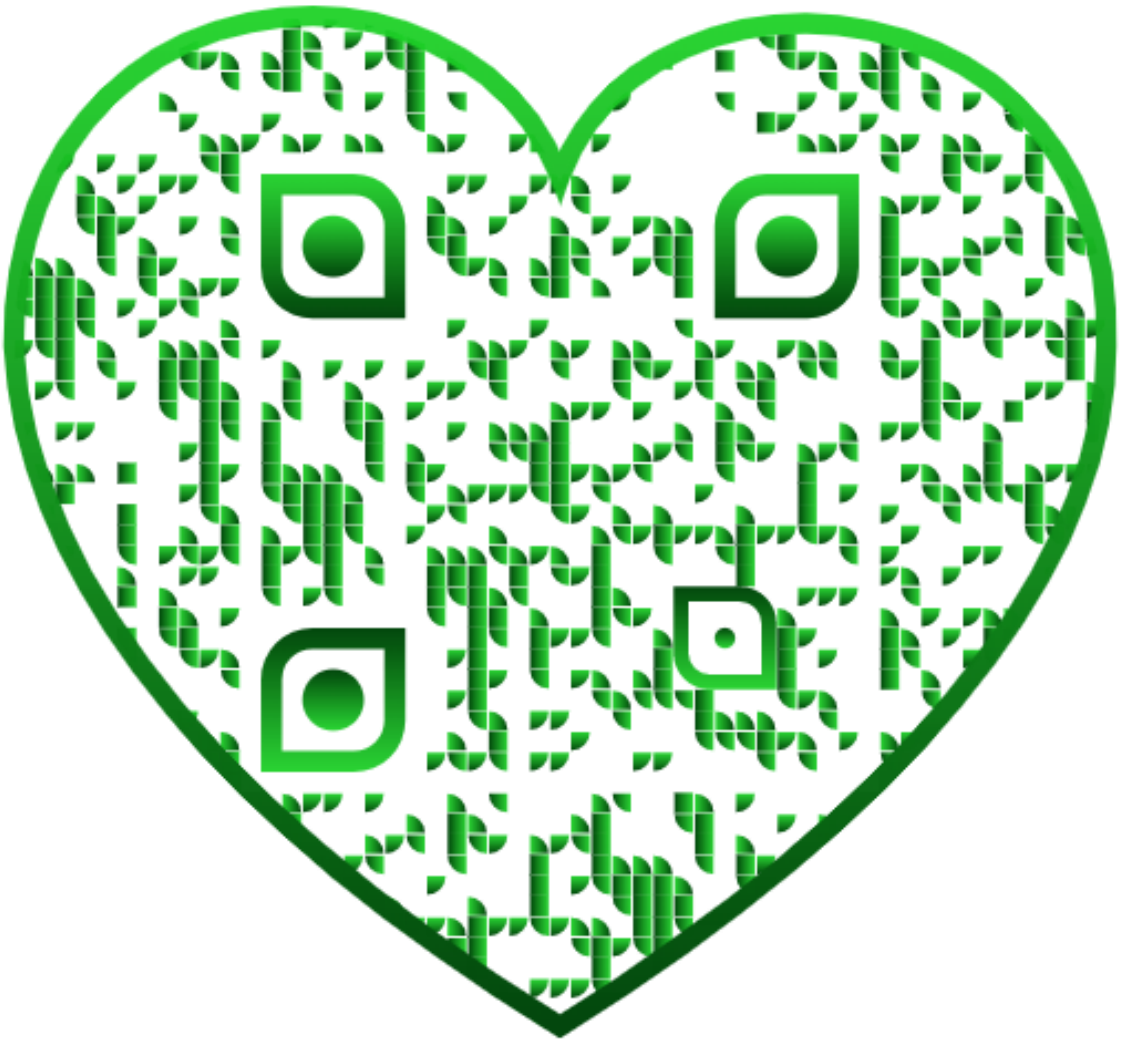

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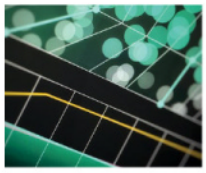

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Editor's Note

Auto-tuning for the people

SI TRUSS
EDITOR-IN-CHIEF

Amid the big awards, performances and celebrity gossip at the recent Grammy Awards, you'd be forgiven for having missed the fact that Antares founder Dr Andy Hildebrand picked up a technical award for his achievement in creating Auto-Tune. It's an absolutely deserved award; while Auto-Tune isn't the only pitch correction tool out there, there's no denying the impact it's had on both the production landscape and wider cultural sphere.

Despite this, Auto-Tune is subject to a unique amount of ire from the general public and certain sectors of the music making communitity. This is at least partially understandable. The distinctive OTT created by heavy handed use of the effect has certainly been a little overused over the past couple of decades. Less justified however, are claims such as those made recently by producer and YouTuber Rick Beato, that Auto-Tune has 'destroyed popular music.' My MusicRadar colleague Matt Mullen wrote an excellent response to this point (see the link below).

The problem is that Auto-Tune has become, somewhat unfairly, a scapegoat for almost everything that people percieve as being wrong with modern popular music. Whether that be the proliferation of electronic sounds over traditional 'rock' arrangements, supposed dumbing-down of pop or the looming threat of AI tools.

In reality, Auto-Tune is a powerful tool that merely streamlines and assists processes that have been present in recorded music for decades. Yes, it's been misused at times, but you could say this about almost any music production tool – from DAWs to effects pedals.

Let's give Auto-Tune a break.

Editor's choice

FROM THE ISSUE:

Cherry Audio GX-80

Plugin emulations of vintage synths are hardly a rarity, but Cherry Audio's recent run of analog-aping instruments have been particularly impressive. Their latest, inspired by the iconic CS-80, is one not to miss.

Review: Page 42

FROM THE ARCHIVE:

Elektron Digitone

Elektron's excellent hybrid groovebox Syntakt is our lead review this issue. Revisit our review thoughts on its predecessor, Elektron's equally impressive digital synthesizer, Digitone.

See more: bit.ly/EMeldig

AROUND THE WEB:

In defence of Auto-Tune

MusicRadar's Matt Mullen makes the case for why Rick Beato is wrong to blame Auto-Tune (among other tools) for supposedly 'destroying' popular music. Read why it's, in fact, a force for good. **See more:** bit.ly/EMidat

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NEW GEAR

PITTSBURGH MODULAR TAIGA "PUSHES THE BOUNDARIES OF ANALOG SYNTHESIS"

Pittsburgh Modular have revealed a new semi-modular paraphonic analog synth that they're describing as a "complete, modern, modular instrument that allows us to explore beyond the boundaries of a traditional analog synthesizer."

Taiga is a desktop synth that can function standalone in a wooden enclosure, or as part of a broader Eurorack setup as a 60hp module. As it's semi-modular, the instrument can be played out-of-the-box, without any patching, using a conventional subtractive signal flow. Alternatively, each of the synth's elements can be used independently and patched into an existing modular rig using the 60-point patchbay.

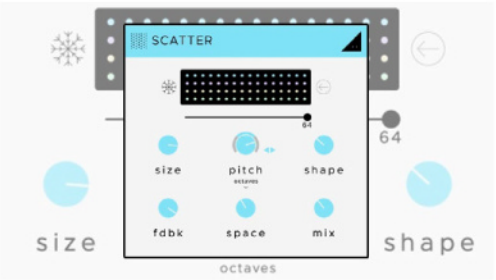
The synth's architecture begins with three analogue oscillators, identical other than for the range of their tuning knobs. These offer four core waveforms, sine, triangle, saw and square, and the user can utilize a six-stage cascading wavefolder to fold between these waveshapes, or introduce pulse-width modulation, with the Shape control. As such, the waveforms generated by Taiga stretch far beyond typical range of sounds associated with analog synthesis.

Taiga is outfitted with a two-pole, 12db/octave analog filter that's described by Pittsburgh as "tweaked to perfection" and capable of producing "a signature gummy and relaxed sound with no dead spots." The filter's equipped with a low pass, high pass and band pass and notch modes, with the option to combine these together in various configurations.

After the filter, the synth's signal hits the Dynamics section, which takes inspiration from the unique design found in Pittsburgh's Safari series of modules and houses a VCA, decay envelope and low-pass gate circuit that's capable of creating plucky, resonant sounds. As for modulation, Taiga features two envelopes and a dedicated LFO with two triangle and square outputs, while each of the oscillators can be used as LFOs themselves.

Taiga's Control panel offers MIDI-to-CV conversion and is capable of arpeggiation, sequencing and randomized voltage generation. Elsewhere in the synth, we've got an analog bucket-brigade delay, mixer, noise generator and a preamp with soft clipping overdrive limiter circuit. Taiga comes with a MIDI dongle and ten patch cables, so you're able to begin patching and hook up the synth to a controller or DAW straight away.

Taiga is available now for pre-order at $799.



SOUNDGHOST'S GRANULAR SCATTER PLUGIN TRANSFORMS ANY SOUND INTO AN AMBIENT SOUNDSCAPE

Soundghost has released a new effects plugin called Scatter that's designed for creating granular soundscapes, shimmer reverbs and scattered sonic textures.

Scatter processes audio into tiny recorded loops, or grains, that are combined and repeated to create cloud-like textures of sound. Up to 64 grains can be generated, while their stereo position and duration can be randomized to create evolving, generative sonics. The grains are displayed in a visualizer at the top of the plugin window.

Grains can be sculpted using controls for duration and amplitude, or even pitched up or down to create unique atmospheric effects. The pitch transposition can be locked to a variety of modes, including chromatic, octaves, fifths and minor and major, and pitch can be modulated to create generative melodies, as seen in the video below.

Incoming audio can be frozen to create an endless, sustained loop, and the grains' playback can be reversed or fed back into the input for reversed textures and longer decays. There's also an onboard reverb that adds a "dark and expansive" character to the sound.

Scatter is available for Mac and PC in AU/VST3 formats. The plugin's listed at $59, but is currently available for an introductory discounted price of $49.

SPITFIRE AUDIO'S ALBION COLOSSUS BRINGS THE SOUND OF HOLLYWOOD BLOCKBUSTERS TO YOUR DAW

Spitfire Audio have announced the release of a new sample library. Albion Colossus is described as their "most epic library yet", and is said to be a "gargantuan, all-in-one toolkit" for blockbuster scoring.

Albion Colossus is a continuation of Spitfire's Albion series, a collection of sample libraries aimed at providing everything that's needed to score a film in one single product. Each edition of Albion is based around a different theme, and Colossus is geared towards capturing the sound of big-budget Hollywood blockbusters, epic action movies that require powerful and dramatic orchestral scores.

We're told that this edition of Albion differs in that it's the first time one of the Albion libraries has been housed within Spitfire's dedicated plugin engine. The Albion Colossus plugin is equipped with a variety of controls. Accompanying the Dynamic and Expression controls we've seen in previous Albion libraries are three new adjustable parameters that enable the user to fine-tune their textures and timbres: Scale, Depth and Hype.

Scale will expand the size of the ensemble that's playing, from chamber to symphony orchestra, for example. Depth will move a mix from a close-recorded, intimate sound to a wide, ambient and expansive tone. The effect that the Hype control has varies for each preset, but is capable of introducing saturation and distortion, and aimed at giving each sound a bit more of an edge.

The Albion Colossus library comprises over 100GB of cinematic sounds, including strings, brass, woodwinds, percussion, drums, synths, and guitars. At the core of the library are recordings of two orchestras: a 42-player chamber orchestra and 111-player symphony orchestra. **Albion Colossus is available now at an introductory discounted price of $349.**

MINDFUL HARMONY IS A FREE ONLINE CHORD PROGRESSION COMPOSING TOOL BASED ON THE CIRCLE OF FIFTHS

Composing music is a pretty mindful activity in its own right, but there's certainly an argument to say that putting more focus on harmony, and thinking carefully about modulations between keys, can be of great benefit.

In order to assist you with this, video game composer Sebastian Karikra has created Mindful Harmony, a free web-based composing tool that's based on that old music theory staple, the circle of fifths.

This encourages you to think carefully about the relationships between different keys and scales, and to create more complex chord progressions that have greater potential to stir the emotions of your listeners.

The action takes place in the Writer tool. This features a graphical representation of the circle of fifths, and a dock section that enables you to choose chords and play them back.

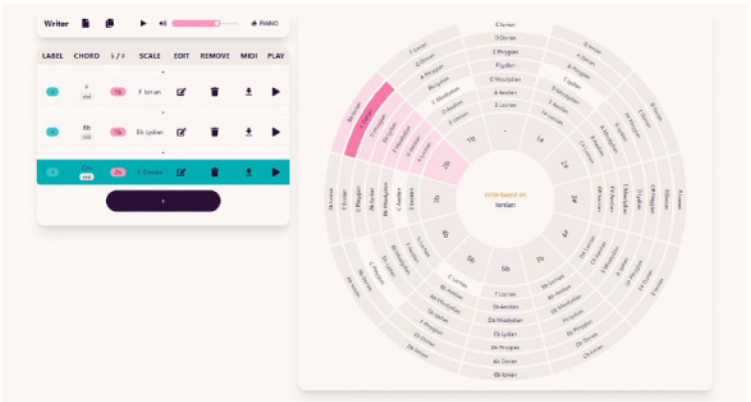
As well as all the major and harmonic/melodic minor scales (you can choose between them), the circle displays the six modes that are derived from each of them. These all contain the same pitches, but have different tonics (root notes).

Mindful Harmony encourages you to introduce subtle or extreme modulation to your compositions by creating chord progressions that move around the circle, modulating between modes as you go to create less 'obvious' and more complex music.

Chords can be selected by clicking the plus button in the dock and choosing your next circle destination. The closer the distance between keys, the more subtle the modulation. If you want a more dramatic shift, choose a destination key that's a fair distance away from your original one.

Once you've done this, you're presented with a new window that enables you to select the mode and chord, with further options for creating extended chords and changing the voicings. To give you a helping hand, chords with one or two notes that weren't present in the previously selected scale are highlighted. The chords in your list can either be played back in order or individually using the built-in piano, guitar, string and chiptune sounds. You can also download a MIDI file of each chord or copy the chord list as text.

We think Mindful Harmony could help both with songwriting and understanding of music theory. If you do find yourself using it, you can reward Sebastian for his hard work by buying him a coffee (ie, making a donation).



MATRIX IS A NEW PORTABLE, AFFORDABLE OPEN-SOURCE GRID CONTROLLER

203 Electronics' Matrix is a minimalist new grid controller that's designed to be extremely portable and totally customizable, thanks to its open-source design.

How does it differ from the many other grid controllers on the market, though? The developer claims that it fills a gap in the market between the high-cost 'pro' devices and the super-cheap ones that have limited features.

Based on the photos, Matrix certainly looks the part. It's just 13.2mm thick and features 64 high-brightness LEDs, with the Pro version also getting an additional 32 underglow LEDs that give you more scope to create impressive light shows when you're performing. The process of doing this is said to have been made simple and accessible.

It might appear that control is limited to the 8x8 grid, but look closely and you'll see that there's also a 'hidden' control button in the center. There are two touchstrips on the sides, too.

On the standard Matrix, the pads aren't velocity-sensitive, but they are on the Pro version. Both devices offer USB-C and Bluetooth LE/WiFI wireless connectivity, with a 2.4Ghz wireless compatibility made possible by an optional receiver.

As we mentioned, Matrix's open-source design means that you can customize it as you wish. It ships with the Matrix OS, with all features supplied as applications within this. Because the OS is open-source, you can create your own apps to suit your needs.

The retail prices for the Matrix and Matrix Pro will be $129 and $199 respectively, but you can currently pick them up for the early bird prices of $99 and $169 via the Kickstarter campaign that has already reached its funding target. You can expect to take delivery of your controller in May or June of this year.

BUCHLA RELEASE UPDATED MUSIC EASEL KEYBOARD

Buchla has announced the release of an updated version of its LEM218 touch-capacitive control keyboard.

The third iteration of the 218 Lunar Excursion Module, named after the spacecraft that first delivered astronauts to the moon, features a revamped touch bed that delivers improved sensitivity and accuracy and expanded I/O.

The LEM218's touch-capacitive interface is one that's featured heavily in Buchla's designs over the years: the brand's founder Don Buchla was one of the first to utilize the touchplate in electronic musical instruments, first integrating it with the Buchla 112 module, and most famously with the the Buchla Music Easel.

The LEM218's touchplate not only registers note data and velocity, but also channel pressure, which translates to MIDI or CV data that can be mapped to parameters in your DAW or synthesizer. The controller also offers MIDI-to-control voltage conversion and features a CV and MIDI touch-strip to use as a pitch-bend or an additional source of modulation.

The controller is equipped with four 3.5mm jacks that output 1v/octave pitch, 0-8 volts pressure, touch-strip voltage, and gate outputs for use with Eurorack equipment. There's also a USB-C connection for hooking up to your DAW. The LEM218's front panel enables the user to control the onboard arpeggiator and configure the velocity and pressure sensitivity, knob behaviour and MIDI channels.

ROLAND'S FP-E50 IS A PORTABLE DIGITAL PIANO WITH ZEN-CORE SYNTH SOUNDS

Roland is back with another portable digital piano, and this one – the FP-E50 – is bringing the company's ZEN-Core synth engine along for the ride. ZEN-Core is Roland's flagship synthesis system – the one used in the likes of the Jupiter-X and Fantom workstation keyboards – and its inclusion gives the FP-E50 a notable point of difference in comparison to other digital pianos.

In the case of the FP-E50, ZEN-Core supplies 1018 onboard sounds (synths, brass, orchestral voices, guitars/basses, drums and more). These can be layered with the all-important piano tones that come included.

Said tones are generated using Roland's renowned SuperNATURAL piano engine, and can be played on the 88-note hammer-action keyboard, which offers escapement and an ivory-like feel.

More ZEN-Core sounds can be added via Roland Cloud. Sadly, it seems you can't install the Model Expansions that emulate specific classic Roland synths – you'll need a Jupiter-X, Juno-X or Fantom if you want those – but EXZ Wave Expansions and SDZ Sound Packs are on the menu, providing you have the appropriate subscription.

Although it's designed for home use – the built-in stereo speakers are a clear indicator of that – the FP-E50 is also portable, and you can hook it up to external speakers if you wish. Other connectivity options include a headphone output, Bluetooth audio/MIDI and computer integration via USB.

There are auto-accompaniment tools, too. You can fire-up full-band backing tracks in more than 200 styles, with more style packs available on Roland Cloud. Accompaniments are triggered using your left hand. Beginners can use one-note triggering, and there's full-chord detection for more advanced players. An Interactive mode enables you to adjust the volume and "energy" of the backing in real-time, and you can set up chord progressions for improvisation in a dedicated sequencer.

Oh, and there are vocal effects, too. Plug in a mic, start singing and the FP-E50 can generate real-time vocal harmonies that follow the chords, and there's a transformer that can switch your vocals' gender or turn you into a robot. Further "studio-grade" vocal effects include a vocoder, an ambience effect, a compressor and a noise suppressor.

Navigation of the FP-E50 is said to be simple. The top-level display shows you the current sound, tempo and other essential information, and we're assured that it's easy to make sound selections, favorite specific tones, transpose and more. Long-press functionality on many buttons is designed to cut down on menu diving, and you can save complete keyboard setups as Scenes, to boot.

Available now, the FP-E50 costs $1,000.

THE POLYBRUTE NOIR IS A BLACK VERSION OF ARTURIA'S ACCLAIMED POLY

The PolyBrute is a fitting flagship for Arturia's analog synth range, offering a beautifully characterful sound and lots of well-designed features. Released a couple of years ago, the instrument is now being given a reboot (reBrute?) with the launch of a limited-edition Noir version.

This differs from the standard model by offering "a slick black exterior, complete with colourful accents, luxurious dark wooden appointments, and signature ionized parts". So yes, it looks a bit different.

Otherwise, as far as we can tell, it's as you were. Like the standard PolyBrute, the Noir version has six analog voices, each of which comprises waveshaping VCOs, dual filters and modulation. You can morph between each preset's two 'sonic states' with the multi-axis Morphée controller and Morph knob, the keyboard is velocity-sensitive with aftertouch, and there's a ribbon controller.

Other features include a modulation matrix, three digital stereo effect engines and sequencing options. We placed the PolyBrute in the top tier of analog polysynths in our review, so it stands to reason that the PolyBrute will be an equally impressive performer. And if black synths are your thing, you've just been given another reason to buy one.

The PolyBrute Noir is available while stocks last priced at $2,699.

Rhodes V8 / V8 Pro

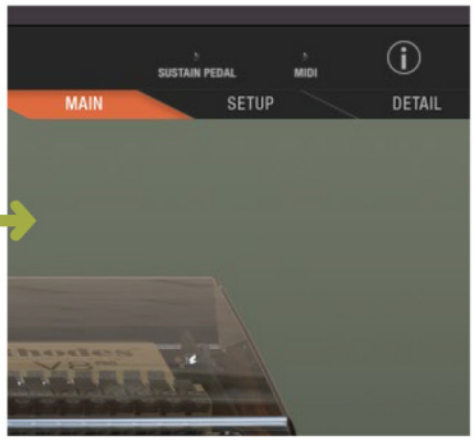
This month, Rhodes announced that they're getting into the software game, bringing to market a version of their latest electric piano model, the MK8. Touted to contain over 30,000 samples across 100 velocity layers, the V8 and V8 Pro show that Rhodes aren't just testing the software waters – they're diving in at full force and making waves.

This is all the more interesting given Rhodes' history. Defending its trademark and branding over the years, it hasn't allowed any software developer to use the Rhodes name. Now, this 'true Rhodes' must compete with established competitors at its own game, and win over fans of the sound.

Let's dive in ourselves and see what sonic potential the electric piano has to offer – we'll be using the V8 Pro model for this article.

1. Getting going

Load up the Rhodes V8 and you'll find a pretty close replica of the MK8 hardware, sitting on your screen, initialized and ready to go. The sound is a clear-toned classic and instantly recognizable Rhodes. We have two more pages of controls, accessed through the tabs in the top-right: Setup lets you change four parameters, each for every single note; and Detail gives you loads of options for customizing the sound of the piano itself and of the effects available.



3. Vari-Pan

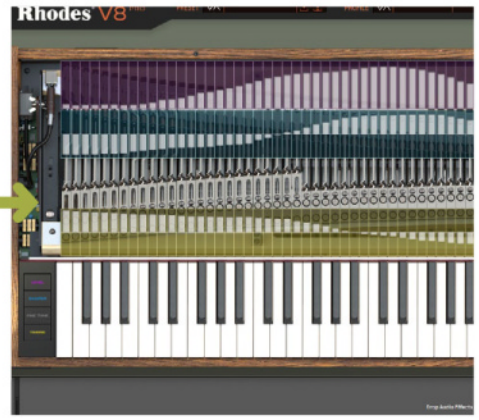
Vari-pan is a typical and standard Rhodes effect that has been employed since the early days of the instrument. With this vari-pan though, things get tastier. There's a choice of four waveshapes (Sine, Ramp, Triangle and Square), Rate (syncable) and Depth. That's quite usual and simple, but in this particular vari-pan, that Rate control can go so far that it hits the audio rate – and then further into it. The result is a ring modulation-style tone that changes a lot depending on the exact Rate setting and the waveshape you have. You can back off the Depth to tone things down a bit.

2. Preamp Basics

The Volume control on the left of the preamp applies gain, quite simply. The Envelope parameter, meanwhile, adds a filter envelope modulation effect to the sound. Envelope interacts with the mid band's filter frequency, pushing it up higher in response to the strength being played at the keyboard. This is basically an auto-wah effect, but it can also create modulation effects when that mid filter is set to cut rather than boost. Next, the Drive control is a distortion modeled from the MK8's diode-based equivalent – the effect is a subtle warming at low levels, into biting aggressive tones when the dial is turned up.

4. Setup page

This screen gives you four rows of parameters and the ability to select a value for each for every single note. Level is a simple gain control, which you can apply to individual notes or move in a pattern across the keyboard. Timbre replicates the effect of a note's pickup being slightly off axis from its tine and tonebar, effectively changing the amount of harmonic content in the sound – again set on a per-note basis. Fine Tune lets you sharpen or flatten any note up to 25 cents either way. And the Damper row controls how readily the damper works on any given note.



The Rhodes MK8

Both the V8 and V8 Pro model Rhodes' newest hardware release, the MK8 electric piano. Announced in 2021, the piano is said to represent a ground-up redesign of the classic Rhodes piano, using modern materials and manufacturing methods to improve on the sound of the originals. Those 'modern manufacturing methods' don't mean they're being mass-produced, though, with every MK8 being crafted by hand and set up by expert Rhodes technicians.

The MK8 introduced a few of the Rhodes features we now see in the V8 Pro, including the Envelope modulation control and extended vari-pan functionality. The effects in the V8 Pro plugin were modeled directly from the MK8 FX version of the instrument, too. A hardware MK8 costs upwards of $10,000, so at $180 (V8) or $300 (V8 Pro), the plugin versions look like a considerably better way for everyone to enjoy the official Rhodes sound.

5. Effects

A huge new part of the Rhodes experience with the MK8, the V8 Pro emulates the effects section on the high-end new piano model. Starting out, there's a compressor to tackle notes' transient portions, giving you Makeup and Amount controls. Next comes a chorus processor to smooth out the sound and create width. Next, a phaser gives you a truly classic Rhodes tone, right from the front panel; and a delay processor, kitted out with sync and tap tempo, rounds out the processing options. All effects have further functions 'under the lid', in the Detail page, which is incidentally where we're headed now...

6. Detail page

This is where the V8 gets really technical. Here we can access parameters that control what was only previously accessible by a Rhodes technician – or at least by a have-a-go-hero. For example, we have the Timbre Shift parameter which, in the same way as the Timbre lane in the Setup page, simulates the instrument's pickups being off axis to its tonebars. There's a Mechanical Noise setting here too, ushering away or bringing back the sound of the keyboard and housing of the Rhodes itself. And then, each effect from the front panel – even the vari-pan – has extra controls to customize its processing.

7. Even more details

Staying in the Detail page, there's a four-band 'Profile EQ' which acts upon the instrument itself – not the electronic signal as processed on the front panel. There's also velocity curve shaping, and control over the sounds created by the sustain pedal as all the Rhodes' dampers leave their tonebars. Finally, you can amp and mic simulation to ape the sound of a Rhodes piano miked up – on stage or in the studio. Four types of amp and two types of microphone are on offer here, for a good range of tonal sculpting and vibe.

EXTREME EFFECTS

Why settle for run of the mill when you can do something incredible? If this thought resonates with you and you're ready to go off the beaten track, then read on...

Contemporary music production is the culmination of decades of techniques and technological advancements, and much of what we now do in our DAWs exploits techniques that were developed long ago using very different equipment. That said, much of what we now view as standard practice was once seen as cutting edge.

Listen to any number of Motown tracks from the 1960s, and it's often the sound of the compressor audibly kicking in or the sound of the analog tape saturating that adds the energy and flavor. Whether this was intentional or not is unclear, and the engineers at the time would also have been trying to achieve the best signal to noise ratio on the available tape. Either way, it certainly contributed to their signature sound and today using and abusing compression in audible ways is commonplace. At a similar time, engineers started sticking mics inside kick drums (initially quite frowned upon) or putting towels on snare drums. Both delivered a tighter sound and eventually led to a situation where close-miking drums became standard.

Akai's S900 put sampling within easy reach and opened a world of envelope-pushing options for musicians

There are plenty of other examples, whether it be overloading analog mixer channels or even master busses, using and abusing hardware processors such as reverbs or overdriving physical processors such as spring reverbs or tape delays.

You can couple these techniques with slightly out there production concepts such as recording a drum kit, one drum at a time (Martin Hannett), or simply turning a domestic setting into a studio (Joe Meek et al). Much of this seems pretty tame nowadays, but the examples reveal how necessity or simply taking a few risks resulted in music production techniques changing and evolving in creative and cutting edge ways. But the story of pushing boundaries and going off the beaten track isn't simply about technology, although that's important. It's also about musical vision, and often it takes someone with an understanding of both music and technology to move things forward.

One such example was in the early 1970s, when a young French musician was looking to bring the experimental sounds and techniques of electronic composers to a more mainstream audience. Eventually, and armed with ARP and EMS synths, Jean-Michel Jarre created a timeless album of melodic and soulful instrumental electronic music. He also showed it was possible to work on this in what was effectively a home studio, and that this music could be commercially successful. And that final part is vitally important, as at the time music technology was an expensive pastime.

Cost was still an issue less than a decade later when sampling technology was in its infancy. Early adopters such as Trevor Horn and Steve Lipson showed it was possible to successfully incorporate sequenced real sounds into mainstream productions, and 40 years later tracks such as 'Relax' and 'Two Tribes' by Frankie Goes To Hollywood still sound impressively crisp and hard-hitting. Nowadays the technical aspects of sample-based productions like these can be achieved quickly and seamlessly in any number of affordable DAWs. Back then the process required not only ludicrously expensive hardware (see the Fairlight CMI) but also the ability to integrate it with other expensive hardware such as tape machines and a mixing desk. It sounds simple enough, but often these integrating aspects provided the greatest hurdle for cutting edge producers of the time.

Of course, for sampling, the real game changer was making the process affordable. Hardware such as Akai's 12-bit S900 and subsequent variants took sampling to the masses and paired with a reliable software-based MIDI sequencer (Emagic Notator for example) on a reliable computer platform (the classic Atari 1040ST) delivered a system that served producers such as Norman Cook (Fatboy Slim) very well for many years. Add in the fact that you could synchronize these systems with a tape machine, which was the de facto method of multitracking, and it's pretty obvious why this precipitated an explosion of homemade boundary-pushing music.

That said, the technology was by no means transparent and often quite clunky and frustrating to use. Time stretching in particular was a bit hit and miss and repeating the process would create a

The sound of silence

Although we're focusing here on how to make your sounds and productions as groundbreaking as possible, music is a combination of sounds and gaps, and at their most extreme, gaps can of course be complete silence. How you use space between sounds is entirely your choice, but if your tracks are a cacophony of extreme sounds then it's easy for nothing to stand out and the impact you're trying to create can become completely lost.

That said, not all silence is the same, and gaps in recordings or even MIDI programmed parts will still have a residual noise floor. This can be precisely what you want and this will create a sense of continuation. At other times you may want total silence and this can be achieved using strip silence, tight audio edits, or by automating mutes in your DAW. Either way, silence is one of the most powerful tools that you have at your disposal for creating impactful productions.

Getty

snowball of audio degradation. So, when you hear the crazy slow down and speed up section in 'Rockafeller Skank', a process that uses time-stretching to maintain pitch but change the tempo, it's important to accept that although today's tools could do this quickly and with better fidelity, at the time it was a challenge and probably took a bit of time to get right. That said, the audio artefacts and various phasey sections – quite possibly where it's been knitted together – are part of the charm.

After sampling, the next big technological shift was all about DAWs and doing the whole thing in the box. If sampling offered a taste of what it would be like to level up, the domination of DAW-based production has really hammered this home.

But this process did not happen overnight. For years, the dominance of Pro Tools, with its proprietary hardware and plugin format, once again gave the lead to those with a decent budget. Frustrating though this was for many creatives, other systems developed in parallel.

In terms of pushing boundaries, software-based production ushered in one of the most revolutionary, overused, controversial and game-changing processors of all time: Auto-Tune. This wasn't the first tool to re-pitch audio, and engineers had already exploited hardware such as Eventide's Harmonizer for this purpose. But the idea that a plugin could automatically fix tuning so successfully was new.

As is often the way, it was the misuse of the process, set to its maximum amount, that got everyone's attention. Cher's 'Believe' may have gone down in history as a gimmicky pop song, but extreme pitch correction is now ubiquitous and used across a wide variety of genres and it's easy to see why. Its brutal, synth-like nature, with a sound that seems to bridge human and machine, offers a more aggressive outcome than other voice-related effects such as vocoder or talkbox. What's more, with many developers and even DAWs offering this functionality as standard, it's both available and affordable. Manipulation of audio pitch, timing, formants and so on has since been taken to new levels by software such as Celemony's Melodyne plugin.

Contemporary DAWs offer a fully integrated production environment, and coupled with the proliferation of excellent plugins, some of which we consider in the following pages, deliver all the tools you need to create boundary pushing music. However, great though this is, you certainly don't have to be a slave to a toolset that's available to everyone. Seeking out unusual old equipment or repurposing contemporary non-music-related systems are both ways to break boundaries. Or you could simply get your sounds from the real world or into the real world to process them. Here you'll find outcomes are endlessly unpredictable and this can be precisely what you're after. Either way, with so many affordable options it's never been a better time to try and do something different and create something new.

Celemony Melodyne is an affordable option for people wanting to get mangling

So, over the following pages, we'll show you how to do just that: to experiment with the tools you already have in you DAW, and also reveal some of the other great plugins you can buy or download for free to mangle your audio. Time to get extreme with your sound!

The late great Sophie was part of a new wave of proudly spikey pop music

Artists to check out

Although pushing boundaries is a subjective thing, we can still learn a lot from others, so if you're stuck for inspiration, here are some suggestions. Liam Howlett (The Prodigy) loves to sample, but also loves to push sonics to the limit and retain a commercial edge. On a sampling tip, Norman Cook (Fatboy Slim) has some great examples of manipulation and time stretching. For creative use of noise, distortion and general programming wizardry Richard D James (Aphex Twin) is a good start, particularly as he knits together so many musical styles. And if more ambient sounds are your thing, both Kieran Hebden (FourTet) and Jon Hopkins create inspiring soundscapes with a dance edge. For vocal trickery, biting leads and bending basses check out Skrillex, and for fast tempo Vocaloid sounds check out Japan's Camellia. Finally, for angular sounds coupled with an innate pop sensibility, SOPHIE (who sadly passed away in 2020) was a real gamechanger.

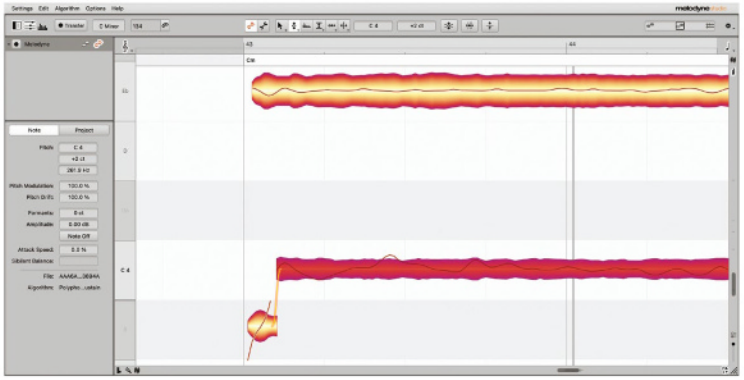
Skrillex has made oddball sound manipulation into a mainstream moneymaker

Getty Images

Liam Howlett was another pioneer of putting aurally-challenging sounds in front of new ears

Six of the best paid-for plugins for extreme sounds

While much plugin development focuses on recreating the past, some developers really take advantage of the powerful options available to them. Here we've plucked six of the best creative and boundary-pushing softwares



CELEMONY
Melodyne 5
from $99
Mac/PC – AU, VST3, AAX, standalone
Pitch manipulation is available in so many forms, and everyone has their favorite tools for specific tasks. Nevertheless, the range of manipulation available using Melodyne is really in a league of its own, and if you opt for the more fully featured versions you'll get direct note access for polyphonic instruments.
www.celemony.com

CABLEGUYS
Shaperbox 3
$99
Mac/PC – AU, VST, AAX
This excellent bundle of nine creative plugins includes much of what you need to reshape, mangle and generally repurpose your audio. Particularly handy are CrushShaper with its bitcrush, lo-fi and multiband enhancer, and also TimeShaper, which includes glitch-ready stutter, half-time, reverse, scratch and tape-stop effects.
www.cableguys.com

ZYNAPTIQ
Wormhole
$199
Mac/PC - AU, VST, VST3, AAX
If you're looking for out-of-the-ordinary sonic transformations, this multi-engine powerhouse is for you. With spectral warping, independent pitch and frequency-shifting, dual-modulated reverb and wet/dry morphing the tools are there for all manner of extreme effects. For extreme pitch-shifting effects, Wormhole is hard to beat.
www.zynaptiq.com

WAVES
Berzerk
$99

Mac/PC – AU, VST, VST3, AAX, Audiosuite

The name here says it all. Berzerk couples 10 unique distortion shapes with an oscillator-based feedback section, dynamics, mid/side processing and global color, providing all you need for creative destruction. And if you're after something new, hit the Go Berzerk option to add random variations to the wave shape. Awesome stuff.

www.waves.com

OUTPUT
Movement
$161

Mac/PC - AU, VST, VST3, AAX

With four synchronized rhythm engines and extensive modulation options, this feature-rich processor will apply crazy rhythms to your audio. Basics are handled by its step sequencer and LFO, but you've also got advanced side-chain modulation, macro controls, an XY performance pad and a bunch of effects modules. Movement is a truly massive processor.

www.output.com

IZOTOPE
VocalSynth 2
$199

Mac/PC - AU, VST, VST3, AAX

iZotope produce some highly-creative plugins (Iris 2 synth and Stutter Edit for example). But for a creative tool with an extreme edge, we have to go for VocalSynth 2. This pitch correction 'plus' design gives you five modules (Biovox, Vocoder, Compuvox, Talkbox and Polyvox) and seven stomp effects to push vocals in all manner of directions.

www.izotope.com

Six of the best freeware plugins for extreme sounds

Fledgling developers are often a great source of plugin freebies. Here we've selected just a few amazing freeware plugins that can help with more extreme processing

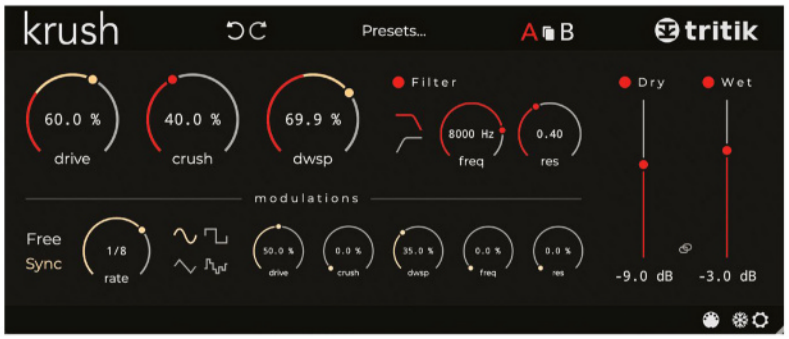
CREATIVE INTENT

Temper

Mac/PC - AU, VST, VST3, AAX

Free distortion plugins are pretty abundant, but this example from Creative Intent includes both a rich saturation stage and its own unique phase distortion algorithm. Throw in a variable saturation curve, resonant low pass filter, adjustable feedback level and before and after visuals, and it's a highly flexible processor.

www.creativeintent.co



TRITIK

Krush

Mac/PC - AU, VST, VST3, AAX

If you want a freeware bitcrush and downsampling solution then look no further than this excellent plugin from Tritik. The main controls include Drive, Bitcrush and Downsample, followed by a high or low-pass resonant Filter. Add in syncable LFO modulation for all parameters with handy halo indicators on the target parameters, and you've got a very well-equipped freebie.

www.tritik.com

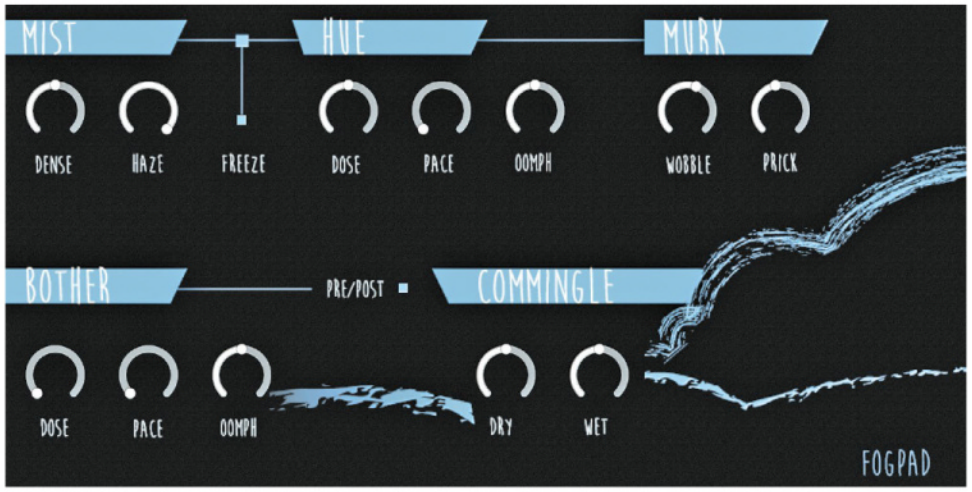
GLITCHMACHINES

Hysteresis

Mac/PC - AU, VST

Stutter effects offer users a fast track to unusual and creative sounds. Build one of them into the feedback path of a delay line, as Hysteresis does, then add in filtering and modulation and you've got something really quite unique. Reverse delays, noisy pitch shifting and granular effects are all within reach and with 60 factory presets, you're good to go.

www.glitchmachines.com



IGORSKI

Fogpad

Mac/PC - AU, VST, VST3

If you're looking at the weirder side of extreme, then Fog Pad reverb should definitely be on your list. If the graphics don't give the game away, the crazy labels will. A touch of Wobble and a smidge of Prick might sound odd but it's all in a day's work for this transformational reverb.

www.igorski.nl

DANIEL GERGELY

Emergence

Mac/PC - AU, VST3

Why have one granular process when you can have four? Well, that's the thinking behind this powerful yet easy to understand plugin. Global parameters such as maximum number of grains are joined by a raft of stream specifics including reverse, grain length and pitch, and ADSR envelope. Modulation comes from four LFOs and capping things off is a handy waveform display.

https://daniel-gergely.itch.io

MELDA PRODUCTIONS

MRing Modulator

Mac/PC – AU, VST, VST3, AAX

Just one excellent plugin from an awesome freeware bundle that includes 37 effects. Create classic, edgy sounds using the pair of oscillators, draw in up to 256 harmonics manually or use the randomizer for more creative results. In typical Melda fashion you've got loads of deep parameters, plus parameter morphing and a whole bunch of presets to get things started.

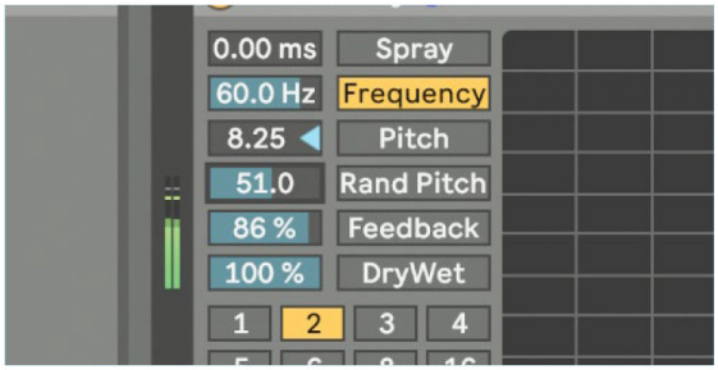
meldaproduction.com

Granular echo with Ableton Grain Delay

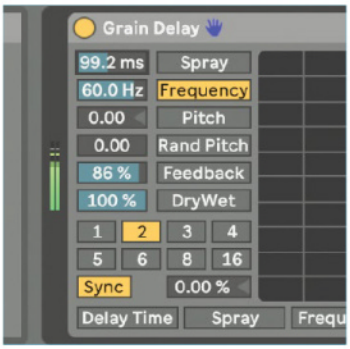
Combine delay and pitch manipulation for unique results

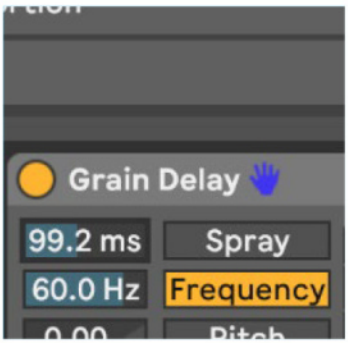
01 Load Ableton's Grain Delay on a track containing a small vocal snippet. Turn up the device's Feedback to repeat the incoming signal at the Beat Division set at the bottom – 2/16th, or 1/8th-notes by default.

02 Sweeping the Pitch control up and down crudely transposes the entire signal. However, raising this in conjunction with Rand Pitch randomly pitches the various output grains up or down, for strange modulation and alien-like repeats.

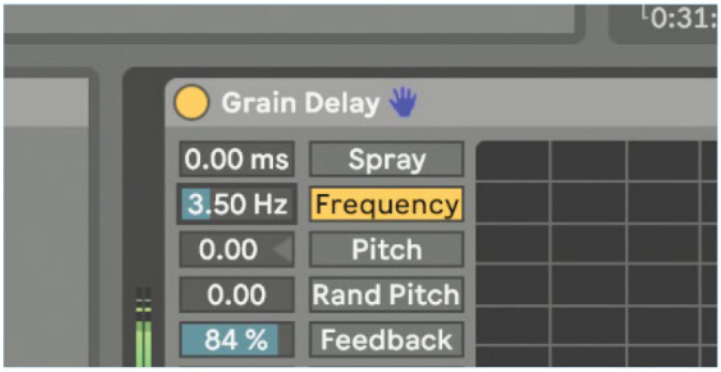


03 Set Pitch and Rand Pitch back to default, then turn up the Spray parameter. This adds random offset to each tiny grain in the delay path, creating noise-like jitter and harshness. Try juggling this parameter together with Pitch and Rand Pitch to create drones and otherworldly FX.





04 The Frequency parameter controls the size and duration of each output grain. Turn this up and down as you trigger the delay to hear its effect. Shorter sizes produce chorus-style fluffiness, getting progressively more noisy and gnarly as this is increased.

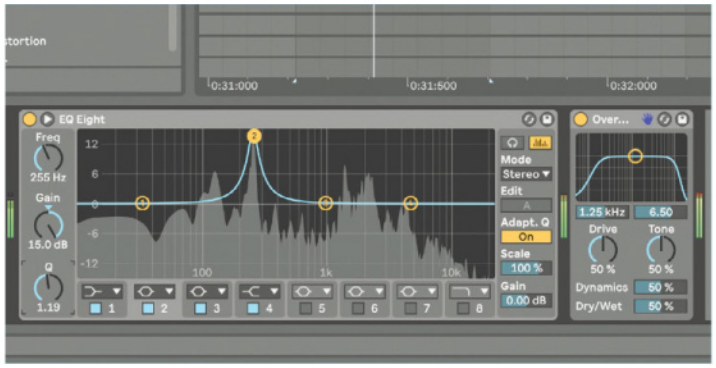


Four extreme effects pairings

Combine processors to quickly generate unique effects. Here are four combos for you to try today...

01 EQ and distortion

Smash a signal through impactful distortion, then place an EQ pre-distortion and experiment with wild peak boosts and cuts. Forcing specific harmonics up into the drive will wildly change the timbral effect, while drastic cuts will quickly clean up or temper the effect.



02 Pitch and reverb

As you sweep a melodic signal's pitch up by an octave or two, use automation to send it to a cavernous reverb effect placed on an aux return. The giant reverb will carry over the rest of the melody, creating a unique 'shimmering' tail that you can render and reprocess.

03 Filtering and compression

Filtering a sound over time creates changes in dynamics as frequencies are removed. Counteract this by forcing the filtered signal into grabby, 1176-style compression, to help keep the filtering effect in the forefront of the mix.

04 Delay and... delay!

Coat a dry signal in some uber-short delay tuned to your track's key to create a tonal, comb-filtered 'robo' effect. Once that's dialed in, load up a second delay effect – set to a slower, tempo-synced delay time – and echo the metallic sound for extension and tail.

Photo: Chelsea Lauren/WireImage via Getty

Words: Danny Turner

NOSAJ THING & SUNNY LEVINE

Undecided on how to finish his first vocal-based album, Nosaj Thing summoned Grammy-winning producer Sunny Levine.

Known for creating ethereal, synth-based instrumental hip-hop albums such as *Drift, Home, Fated* and *Parallels*, Jason Chung (AKA Nosaj Thing) has slowly moved towards a singer-songwriter aesthetic, reflected in both his own releases and vocal-based production sessions with a host of other artists.

Going full steam ahead with that theme for his fifth Nosaj Thing album, *Continua*, Chung began collating vocal ideas from a stellar ensemble of guests, including Toro y Moi, Kazu Makino (Blonde Redhead), Julianna Barwick, Slauson Malone, Panda Bear, and Eyedress, amongst others.

Overwhelmed by the range of possibilities, Chung felt he needed help to cross the finish line. Having long collaborated with Sunny Levine – son of Stewart Levine and grandson of the legendary Quincy Jones – the in-demand producer was enlisted to help Chung fully define his creative vision.

Jason, do you typically work with a producer or is this the first time?
Jason Chung: It's the first time. From being a bedroom producer who primarily started making instrumental music, I've naturally progressed towards working with other artists and vocalists and that's something I've had to learn, but this time it got to a point where it became a bit overwhelming because I was dealing with ten songs that all had vocals.

How did you get in touch with Sunny?
JC: I met Sunny over ten years ago and we've been working on music together for at least five of those so I've always trusted his tastes. Most of the record was made remotely with other collaborators either prior to or throughout the pandemic, but it got to a certain point where I realized how much I missed having Sunny in the room and his advice on how he hears music. Basically, I just called him to say that I needed help finishing these songs.

Sunny, people may not know that you're Quincy Jones' grandson. How influential was he and your father Stewart Levine in your decision to become a producer?
Sunny Levine: They were pretty damned influential [*laughs*]. It's almost a family business, so it would have been stranger for me not to become a record producer. They taught me about dealing with artists and how to roll up my sleeves and make a record in a room full of people, but I had to find out the modern way of making records on my own, which is making beats using samples and being alone in a room. Somehow, between that old-school world and what I discovered from working with hip-hop producers or trip-hop people like Howie B, I found this weird in-between place that makes me helpful for people like Jason. I like the idea of producing producers.

Jason, in what way was your approach to this album different?
JC: This is the first album that I wrote working backwards. The photo on the cover is shot by a hip-hop photographer called Eddie Otchere who lives in LA but is actually from the UK. I was blown away by his photos in the mid-'90s, so I followed him on Instagram and found an image that almost felt like it had been taken out of my head. It became the mood board for this record, almost as if I was scoring to picture, and I sent it to all the vocal collaborators along with four or five song sketches.

Sunny, do you typically like to discuss concepts and ideas with artists prior to working with them?
SL: I like to find out what an artist is looking to do and then try to turn them on to whatever I know that relates to that. Part of why Jason and I work so well together is that we've hung out in the studio so much and played each other so much music that we've developed a language. Normally I'd have to figure that out with someone, but we've already spent years doing that so we can easily make dynamic shifts in our decision making.

Can you give us an example of how a creative decision might have changed the direction of one of Jason's songs?
SL: There's a song called 'Grasp' with Coby Sey, Slauson Malone and Sam Gendel that we were trying to finish. We had all the parts in from everybody and I said we should try and turn it into a track that drives Gilles Peterson insane – let's make it a Gilles Peterson fantasy! Music's so abstract and you can make so many decisions even when a song is close to being finished that you just need something to chase after so you're not drifting and making random choices. I guess that's an example of taking a song and trying to get it over the finish line.

As mentioned, every track has a different vocalist. Was there a particular reason for moving in a more song-oriented direction?
JC: I listen to most of my music in the car and just noticed that I really enjoyed listening to vocals in that environment. As I'd also been

producing for other artists and doing more vocal sessions, it felt like the right time to experiment more with vocals in my music. My favorite records growing up were Unkle, Portishead and Massive Attack and I feel there's been a void in that space for a while, but I didn't want *Continua* to be nostalgic – it's my futuristic version of those records that were influential to me.

SL: A lot of modern electronic music will just use a little hook or a piece of a vocal, but when you listen to those Massive Attack records they're real songs. They had such a major effect on both of us and we had lots of interesting conversations about why we felt this direction would work.

How did you go about sourcing vocalists for the album?

JC: That was the most difficult part. I'm quite shy and socially anxious, but I drew up a list of artists that I truly admire, respect and had been listening to during the whole of the pandemic and gave it to Dom at LuckyMe Records. He suggested I reach out to them directly, so I started contacting a few and they were down to collaborate, which only inspired and motivated me to keep going. Don't get me wrong, it took about a month to gather enough courage just to message them [*laughs*], but it also taught me to go after the ideas that you have in your head because you really never know until you go for it.

> "Every record I've made has been recorded in a different space, so I decided that whichever piece of gear I hadn't used in a year, I'd sell"

You mentioned giving them a choice of tracks to work on?

JC: I'm always working on little 30-60 second sketches and I keep them on my hard drive like a diary. When it's time to actually make an album, I'll start going through all those ideas and bring them into a new folder, so I basically sent those sketches to each vocalist and whichever ones they gravitated towards I made arrangements for and started building the tracks up that way.

Were all the vocals recorded remotely or was it essential to work with each vocalist in person where possible?

JC: I'm already aware that to be a good producer you need to be a really good communicator, so once I was ready to have those conversations I did my best to explain to them what this record was all about via FaceTime or a Skype call. Most of the singers were in different time zones and when you don't know someone all that well it's hard to sync up at first because you're just learning how to communicate.

SL: A lot of times Jason would get an idea back from a vocalist and he'd work on it, or we'd work on it together and decide that if they could just do one more verse that felt a certain way we could flesh the track out and finish it. Music is all a puzzle and that can be overwhelming, especially when you have that many tracks from different people.

Is that basically how your creative partnership evolved throughout the making of the record?

JC: A good example would be the 'Grasp' song that Sunny mentioned. It all started with Slauson Malone laying down a guitar riff and bassline, then Sam Gendel gravitated towards that idea and added sax and I put down some drums. When the track got to Coby Sey, he laid vocals down to everything Sam had recorded, but when Sunny heard it he thought everything sounded a little crowded so we decided to move it all around. It was the same with the last track 'Different Life', featuring Eyedress. He wrote a few words and just sang them over and over for 20 minutes until it almost sounded like a mantra. But the words kept changing and so did the delivery, so Sunny and I just cut it up and puzzled it all together.

SL: Sometimes the proportions are off and you only have to move something a little. I'm not sure if I know anything special that Jason doesn't, it's often about just having another pair of eyes and ears to work alongside you.

What's your view on working with artists remotely – is it a necessary evil or does today's technology render it less important these days?

SL: If you'd asked me a few years ago I'd have said there's no way you can make good records remotely, but during the pandemic I made a record with Jon Batiste remotely and it won a Grammy [*laughs*]. When you work with someone in a room, there's sometimes a lot of pressure and that can make great things happen, but sometimes people are more likely to give you something special from their own comfortable space with their own gear. The optimistic view is that it's all cool, but it's good to be back in rooms working with people.

JC: Because I primarily come from making instrumental music, I guess that I treat vocals as just another instrument. Maybe that's why working remotely with a vocalist works for me because the chain of effects and EQs I use are the same as on any other synth part so it doesn't sound pasted on. Do you know the band Broadcast? They're one of my favorites and you can hear this reverb throughout all of their records. I always liked the idea of that because it makes it feel like everything came from the same room.

SL: All the great old records are like that – even early jazz records. You had all these different guests coming in but because they were all recorded in the same room with the same plate reverb it's all tied together. Nowadays, people try to use as many plugins as they can, but sometimes it's better to be a little more disciplined and take an overall view of the sound.

A few other people played an important role in relation to the live instrumentation used on the record, notably Michael Andrews and Amir Yaghmai?

JC: I first worked with Amir on a track ten years ago and I met Mike Andrews – a film composer known for working on the movie *Donnie Darko* – through Amir. I really saw this record as a movie and felt I could bring a cinematic quality to it if we included strings, piano and other live instrumentation. It started with us just sending each other music on Spotify and then I'd go to Mike or Amir's studio to do some overdubs. They helped bring the record alive.

SL: Those two guys are the Zen masters of overdubs. When you use them you know nothing bad is going to happen to your record – you're just going to get cooler sounds. Whenever we were finishing a track and it needed a flash of extra color, we'd take something that Mike or Amir had played and it would take care of a moment.

Jason, we last spoke to you around the release of *Parallels* in 2017. Has your studio evolved much since then?

Photo: Lorne Thomson/Redferns via Getty

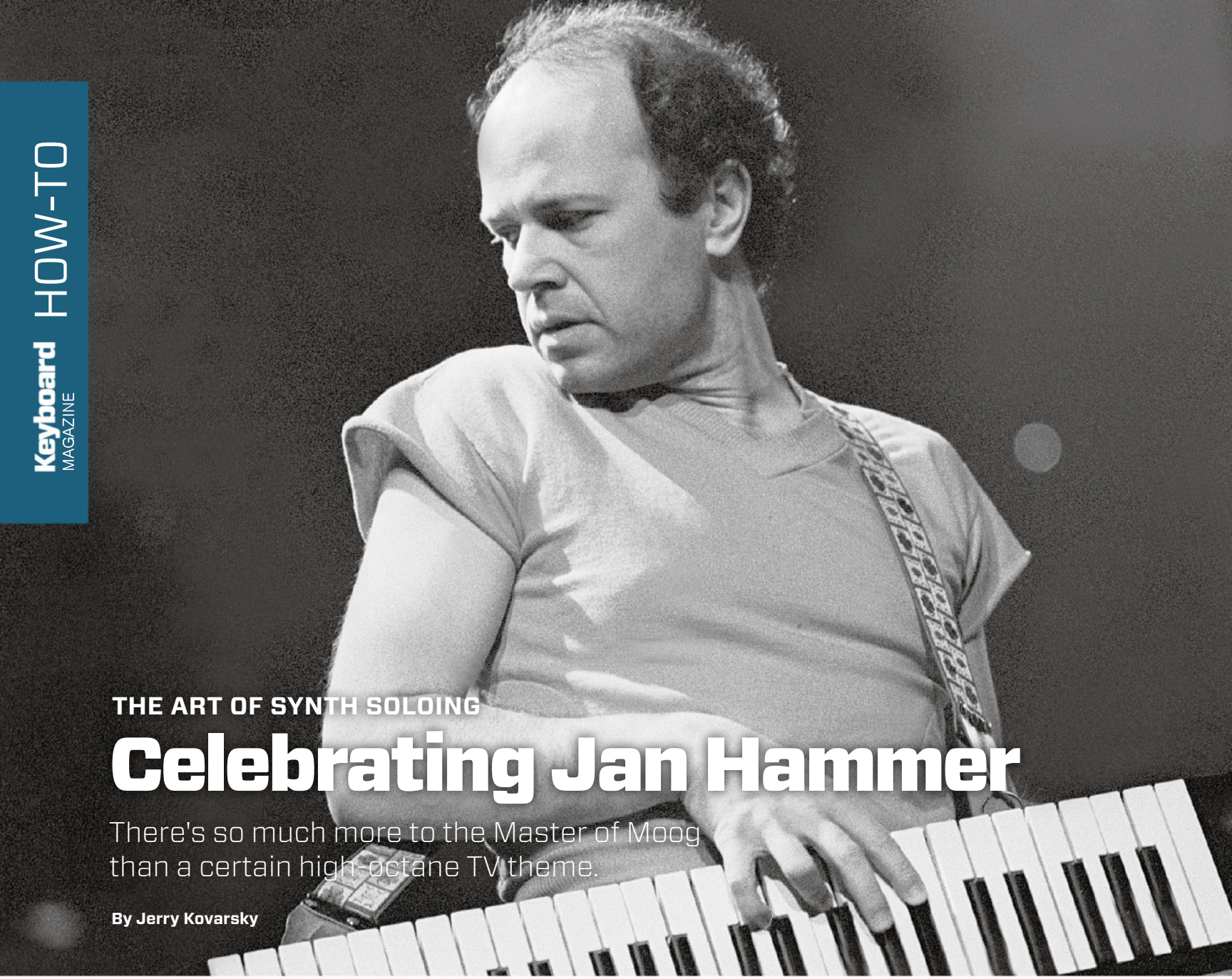
JC: Every record I've made has been recorded in a different space, so I decided that whichever piece of gear I hadn't used in a year I'd sell, and that was mostly vintage stuff. I just kept a few key pieces like the re-issued Prophet-5, a Yamaha CS-50 and I love the Teenage Engineering OP-1 synth. I also got rid of my original TR-909 and replaced it with a Soma Labs Pulsar-23 because it sounded new to me. I don't want to be a collector and there are so many new instruments in the plugin world that I'm interested in.

What plugins are interesting you right now?
JC: I really love anything that UA is doing or plugins by Arturia or AudioThing and wish I could shout out to certain people from the Max for Live community as I use a lot of their patches. I also love using Cableguys' HalfTime plugin. From my understanding, it pitches whatever you send it down one octave and divides the time of the rhythm and how it's processed in real time. I usually use it for a chord progression or melody that needs to be flipped.

Are you running your soft synths out of the box and through outboard?
JC: That's a good idea [*laughs*]. I'll usually run soft synths through pedals to shape some of the sounds. Meris makes some really interesting pedals like the Polymoon and I like Retroactive Pedals' Dot Chaser, the MOOD Chase Bliss pedal and a spring reverb by Vermona called the Retroverb Lancet. All my hardware runs through a Speck Electronics X.Sum summing mixer into a BAE 1073 dual Neve clone and straight into the UAD Apollo.

Sunny, as a producer does your setup reflect a requirement for flexibility?
SL: The room I have now is great to both begin and finish records in. I have an 8-channel Neve sidecar console that I run everything though and my drums go through an old Alice 828 mixer that's great for giving you messed-up sounds. I grew up using an Ensoniq ASR-10 and an Akai MPC3000 to make records with and still get to use those a lot, but for this record I just went to Jason's studio and was mostly using my brain rather than getting too hands-on with gear.

You seem to work so well together – what comes next?
SL: We're down for doing anything in the future but I also think it would be great for us to help make other people's records. We've talked about that so much – we've gotta put it out in the universe bro...
JC: Okay, I feel like Sade, or whatever an answer to a new Sade would be – a trippy, sexy, night-time soul record. ■



THE ART OF SYNTH SOLOING

Celebrating Jan Hammer

There's so much more to the Master of Moog than a certain high-octane TV theme.

By Jerry Kovarsky

This month we explore the player who defined how the synthesizer became a lead instrument in jazz-rock, rock, funk and other styles of music: Jan Hammer. He single-handedly defined the technique and vocabulary of pitch-bending, and stood toe-to-toe with many of the greatest guitar players of our age.

Eastern European Roots

Jan is a native of Czechoslovakia, now known as the Czech Republic. Coming from a musical family, he studied classical piano as a youth, until the jazz bug bit him in his teens. He immersed himself in that music, both on piano, organ and drums. An early recording called *Maliny Maliny* finds him playing very progressive jazz on the B3. When Russia invaded his country in 1968 he fled to the United States, enrolling in the Berklee School Of Music and becoming a US citizen. He toured with jazz vocalist Sarah Vaughan as her pianist and musical director after leaving school, and then settled in New York City to develop his career. There he met a lot of musicians who, like himself, were exploring Indian and Eastern European elements combined with the rhythmic power of rock, all with a highly improvisatory approach. Hammer points to his work with Jeremy Steig as an example of these early creative efforts [**bit.ly/EMjanh1**]. He speaks of hearing the Tony Williams Lifetime band while in Boston as a huge influence, one that introduced him to the playing of John McLaughlin on guitar. The explorations of Miles Davis (who he jammed with), and then Jimi Hendrix became further catalysts for his progressive development.

Searching For Relentless Energy

Hammer was breaking away from the confines of bebop and post-bop playing, chasing what he defined as the relentless energy he found in artists like John Coltrane and Hendrix, and he also recognized in McLaughlin's playing. So when John asked him to jam and explore forming a new group he jumped at the chance, and the Mahavishnu Orchestra was soon formed. The group quickly rose to fame on the heels of their incendiary live performances. They soon found themselves touring as a

rock band would, playing to large crowds and leaving audiences in disbelief, and roaring the loudest approval.

Jan was looking for a way to expand his sound, and break away from the restrictions of the keyboard. He wanted the freedom to slide notes around, bend pitches and have a sound that could stand up to the volume and tonal aggression of a guitar player. In the spring of 1972 he bought a Minimoog, and after locking himself away in his loft for a few weeks he found his voice, and brought the instrument into his performances with the band. There is no precedent for the approach and language Jan developed on the synth from previous synthesizer recordings. Eastern European vocal and stringed instrument music, and the language of blues and rock guitarists informed his use of pitch bend. His timbral choices were his own, and suited the highly rhythmic and aggressive way he attacked the complex music the band played. Here [**bit.ly/EMjanh2**] is his first recorded use of the Minimoog, from the band's second album *Birds Of Fire*. You can see him tear it up on the synth in this live performance [**bit.ly/EMjanh3**] in August of 1972. And this section [**bit.ly/EMjanh4**] of the tune "Awakening" from their live third album, *Between Nothingness and Eternity (Bonus Disc)* showcases Hammer playing along to a sequenced riff in a style that no one was doing (yet) at the time.

Setting The Standard

Jan became an in-demand player for the artists who were defining the jazz-rock movement, and was featured on many of the top recordings of that era. His intro on Billy Cobham's "Quadrant 4" from the album *Spectrum* is a classic example of how he developed his lines and his powerful style on the instrument. Hammer played electric piano and synth on the tune "Lopsy Lu" from Stanley Clarke's second album. Jeff Beck reached out to Jan to work with him on the follow-up to his hugely successful *Blow By Blow* album, and Hammer contributed two songs to that album, *Wired*, including the now-classic "Blue Wind". The two musicians found themselves kindred spirits and recorded and toured together many times. This live performance [**bit.ly/EMjanh5**] shows Hammer taking the dominant role onstage from Beck as a now-rocking front man, playing a strap-on keyboard commonly called a keytar. They last reunited in 2016 to perform the tune "Star Cycle", which Hammer wrote for Jeff's 1980 album *There and Back*. Plenty of artists enlisted Hammer's signature playing, including Al DiMeola, Carlos Santana, Neal Schon, Tony Williams and others. He made many recordings under his own name, and with his own group: standouts include *Oh Yeah*, *Melodies* and the classic *The First Seven Days*.

Scoring Successes

Jan began composing for film and TV in 1984. He was approached by director Michael Mann to get involved in a show about detectives fighting crime and the drug trade in Miami. Jan played him a piece he was working on using the Fairlight CMI to develop techniques for creating driving, pulsating grooves, and that became the theme for the infamous *Miami Vice*. The show was an instant success, and Jan's theme song ended up reaching number one on the Billboard Hot 100 Singles chart, was a top 5 international hit, and nabbed him two Grammies (Best Pop Instrumental Performance and Best Instrumental Composition). The show's soundtrack album sold over four million in the U.S., reached quadruple-platinum sales, and is reported at over seven million unit sales worldwide to date. Jan has gathered much of the music he wrote for the show and released it as *Miami Vice: The Complete Collection*. He has a huge CV of film and TV work that followed. Jan got involved early on in the world of computer animation, scoring the ground-breaking *BEYOND The Mind's Eye* video album, a project that spent 112 weeks on the Billboard Top Music video charts, and was certified triple-platinum. He continued scoring; making albums and more throughout the end of the decade, and then his career went quiet. So it was a most welcome return when in 2006 Hammer scored the film *Cocaine Cowboys* and then made a rare live appearance at the Moogfest in NYC. He finally returned to original music in 2018, releasing an album of musical sketches called *Seasons Pt. 1*. This was followed in 2020 by *Sketches In Jazz*, and again in 2022 with *Seasons Pt. 2*. All recorded by himself in his home studio, these releases span many musical styles and moods, and were welcomed by his legions of fans, and to critical acclaim. ■

EASY GUIDE

Mixolydian mode

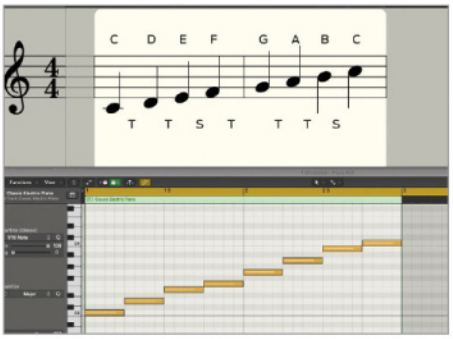
This month, our resident theory guy Dave Clews unravels the mysteries of the Mixolydian mode

The Mixolydian mode – sounds very exotic, but what is a mode anyway? If you think of your average digital radio, it might have a DAB mode, an FM mode and an auxiliary input mode.

So you could say that each mode represents a different version of the radio – when you switch to a different mode, the radio alters its function. It's the same for musical major scale modes – a mode is simply a different version of a scale, most often just played from a different starting note. When you do this, it alters the interval pattern between the notes in the scale, transforming the way it sounds – in other words, you've shifted to a different mode of the scale.

Each mode has its own name, character and function – for instance, the major scale is a mode in itself, known as the Ionian mode, while the natural minor scale is equivalent to the Aeolian mode. You can demonstrate this by playing a C major scale, all the white notes on the piano keyboard from C to C, then playing the same notes from A to A. It sounds sadder because you're now playing A Aeolian – the C major scale played from its sixth note, which also happens to be the same as the A natural minor scale. Confused? Don't worry, in the steps that follow I'll be focusing on just one of the seven major scale modes – the Mixolydian mode – what it is, how it works and how to use it.

Step by step Working in Mixolydian mode

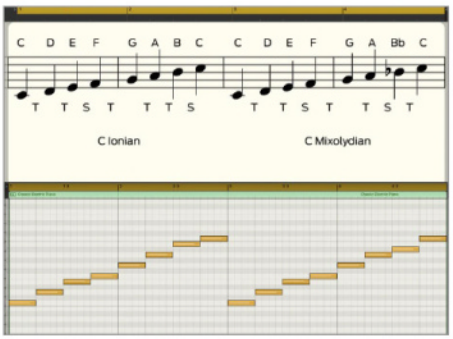


01 So here's the C major scale, as described above – all the white notes on the piano keyboard played from C to C. The interval pattern this gives us is T-T-S-T-T-T-S, where T stands for Tone and S for Semitone. It's this pattern of intervals between the notes that makes it a major scale, also known as the Ionian mode.

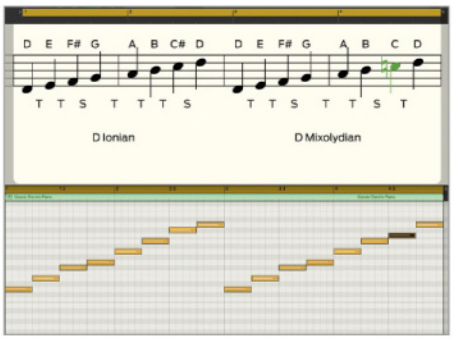
Mode	Starts on	Notes	Intervallic Pattern	Produces
Ionian	C		TTSTTTS	C Ionian
Dorian	D		TSTTTST	D Dorian
Phrygian	E		STTTSTT	E Phrygian
Lydian	F		TTTSTTS	F Lydian
Mixolydian	G		TTSTTST	G Mixolydian
Aeolian	A		TSTTSTT	A Aeolian
Locrian	B		STTSTTT	B Locrian

02 Each major scale mode can be produced by playing the C major scale from a different starting note each time. Every different note you start on produces a different pattern of intervals. Shown above is a table of all seven major scale modes, their names and starting points.

03 So to generate the pattern of intervals that make up the Mixolydian mode, we need to play the notes in the C major scale from the fifth note in the scale, which would be the note G. Doing this produces the interval pattern T-T-S-T-T-S-T, which is only one note different from the major scale itself, but sounds quite different.



04 If we take this interval pattern and play it from note C instead of G, we get C Mixolydian. This is identical to C Ionian except for one note – the seventh degree, B, has been flattened by a semitone to a Bb. So from this we see that the Mixolydian mode is the same as a major scale with a flattened seventh degree.



05 With all of this in mind, let's try playing D Mixolydian. If we now take the D major scale – D, E, F#. G. A, B, C#, D – and flatten the seventh degree by a semitone, we end up with D, E, F#, G, A, B, C, D. Checking the interval pattern, this gives us T-T-S-T-T-S-T – confirming that this is, indeed, actually D Mixolydian.

06 Because of its flat seventh, the Mixolydian mode works particularly well with dominant seventh chords, a four-note chord consisting of a major triad with an added flattened seventh stuck on top. For example, C7 is a C major triad (C-E-G) with an added Bb – the flattened seventh degree of the C major scale.

Recommended listening

STUDIO KILLERS - EROS & APOLLO
Great example of a Mixolydian melody used in a dance setting

bit.ly/sk_ena

AU5 - ATLANTIS
Mixolydian's flat seventh makes its presence strongly felt in this dubstep track

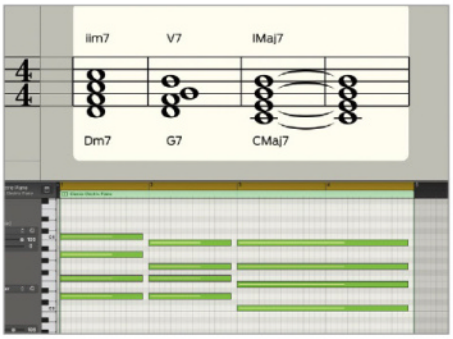
bit.ly/au5_atlnts

Pro tips

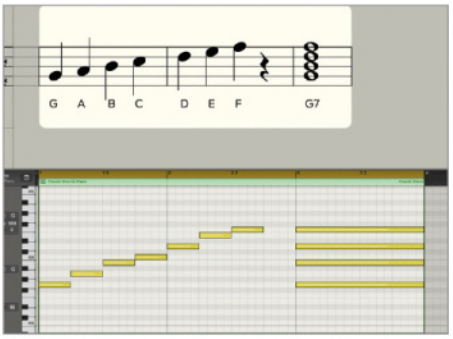
Relatively interesting
In the same way that a major scale has a relative minor scale that contains the same notes, each major scale also has a relative Mixolydian scale. For any major scale, the relative Mixolydian mode starts on the fifth note. So C Mixolydian is the relative Mixolydian of F major, for example, because the fifth note of the F major scale is C. Both C Mixolydian and F major contain the notes C, D, E, F, G, A, and Bb.

Scale it up
Mixolydian's flattened seventh means that the mode lends itself to plenty of genres. it's very popular with guitar players, so plenty of jazz, blues and rock tunes are based on it, but it also has a bright, optimistic quality that lends itself to styles such as uplifting trance, dubstep and electro. So if you're into making EDM, why not start off your next track with a Mixolydian melody and see where it takes you?

By Dave Clews
Over the course of his 25-year career, Dave has engineered, programed and played keyboards for numerous artists including George Michael and Tina Turner

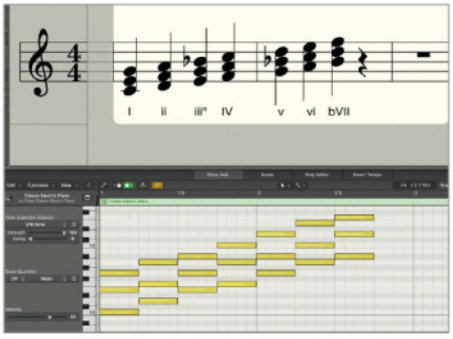


07 So here we have a typical ii-V-I chord progression, but instead of three-note triads, it's made up of four-note seventh chords, including a dominant seventh chord – the V7 chord. We're in the key of C major here, so the chords work out as Dm7 (D, F, A, C), G7 (D, F, G, B) and CMaj7 (C, E, G, B).

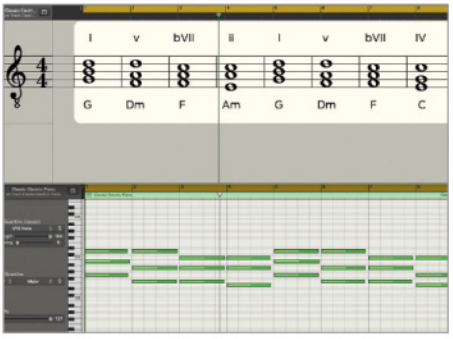


08 When writing a melody to go over these chords, we can use notes from G Mixolydian (G A B C D E and F) over the top of that dominant G7 chord (G, B, D, F). We know this'll work because the G7 chord and the Mixolydian mode both contain that all-important flattened seventh – F.

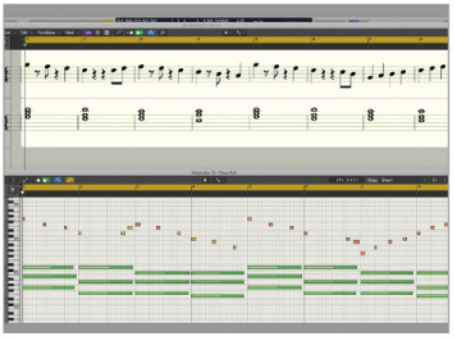
09 Not only that, but also because G Mixolydian uses all the same notes as the C major scale, we know it'll fit with our C major progression. So the melody I've chosen to fit over the G7 chord descends through B, A, G and F, moves down to D and finishes on E, the major third in the underlying C major tonic chord.



10 Harmonizing the Mixolydian mode, by stacking up alternate notes in threes to build triads, gives us the following set of diatonic chords: I, ii, iii°, IV, v, vi, bVII. We can use this mode to write a whole track by using a chord progression based on chords that are diatonic to the harmonized Mixolydian mode.



11 Here's a classic trance progression in G Mixolydian that follows G > Dm > F > Am > G > Dm > F > C. In Roman numerals, this equates to I > v > bVII > ii > I > v > bVII > IV. The standout chords that indicate Mixolydian mode are the I, IV and bVII. I'm using G Mixolydian as an example here, simply because it's utilizing all the white notes.



12 If we were to put a melody over this progression, using the notes from G Mixolydian would definitely work. As an illustration, the piano and bell melody shown here ends with an actual ascending run up the G Mixolydian scale. Used in this context, the mode takes on an almost wistful, euphoric quality.

© Image courtesy of perfectcircuitaudio.com

BLAST FROM THE PAST

Linn 9000

It was expensive, unstable, and overspecified, and it dealt a fatal blow to Roger Linn's company... but it set the tone for the future of music production

Roger Linn's name is revered in electronic music circles, and for good reason – he has an uncanny ability to predict what musicians need before they themselves know, and delivers it in spades. His LM-1 Drum Computer was the first to combine user-programmable patterns with samples of real drums. Its staggering price made it the exclusive plaything of moneyed hitmakers who churned out endless chart-toppers built on its irresistible groove.

The LM-1 was followed the LinnDrum, a cheaper, more powerful successor that fell short of the LM-1 only in that not all of its samples could be repitched. Released in 1982, the LinnDrum came in just before the introduction of MIDI, though a retrofit was offered by third parties. Linn's next drum machine would make up for this omission – and then some.

With a massive grey chassis emblazoned with a pink and turquoise logo, the Linn 9000 is the epitome of 80s style. Yet to modern eyes, there's something strikingly familiar in the thick, pressure-sensitive pads, gently sloping panel and LCD display. It becomes even clearer when reading the specifications. You see, the Linn 9000 wasn't just a drum machine – it was a full-featured MIDI production studio, and the template upon which many manufacturers still build their beatboxes to this very day.

As a drum machine, the 9000 was cutting edge, offering 32 drum sounds that could be triggered with those 18 velocity- and pressure- sensitive pads. Individual tuning, pan and level were available for every sound, as were dedicated outputs. Linn's famous shuffle was included as a unique programmable hi-hat decay, adjustable by means of a dedicated slider.

However, it was the integrated MIDI sequencing that transformed the 9000 into something truly special. Until the Linn 9000, no one had thought to combine drum and MIDI sequencing into a single unit. Here, users could avail themselves of 100 drum sequences and 100 MIDI sequences of up to 10,490 notes. Optional extras, as if the main features weren't enough, included user sampling, SMPTE, a floppy drive, and an additional six trigger inputs.

Such power cost the jaw-dropping price of $5,000, the options adding another $2,000. As such, this was clearly aimed at the studio producer who would not be able to suffer the Linn 9000's birth pangs. The rush to market revealed the unit's software to be buggy, unstable, and unfinished. Still, that didn't stop it being scooped up and used to great effect by luminaries like Michael Jackson; George Michael; Hall & Oates; and Stock, Aitken and Waterman.

Eventually, the troubled 9000 contributed to the closure of Linn Electronics, the remaining inventory picked up by Forat Electronics – who fixed the 9000's bugs and still service them today, and even sell their own version! Roger Linn himself would apply the best bits of the 9000 design to his next classic, Akai's legendary MPC60, revolutionizing music production again.

TECH SPECS

Year of manufacture 1984-1987
Original sale value $5,000
Current price approx. $1,100
Number made 1,100

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NO
Reload Ptn
Modifier
Setup
Rtrg/Oct+
Rtrg/Oct-
µTime-
µTime+
1:4
2:4
3:4
4:4
PTN
Metronome
BANK
Mute Mode
PAGE
Fill/Scale
Digital/Mute
Analog/Mute
M1/Retrig
M2/Velocity
M3/Mod A
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MIDI Thru
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elektron.se

By Si Truss

Strengths

+ Excellent balance of analog and digital sound sources
+ Percussive synths double up as meaty melodic generators
+ Deep sequencing workflow, complemented by Overbridge compatibility

Limitations

- Limited hardware I/O
- Workflow will likely still take some getting used to for those new to Elektron gear

Elektron's latest groovebox borrows sounds and ideas from various places in the company's product line. Is Syntakt more than the sum of its parts?

In the early 2010s, Elektron were known as a brand responsible exclusively for deep, high-end gear. The likes of Octatrack, Analog Rytm and Analog Four were up there with the best hardware instruments on the market, but prices for each hovered at the $1k mark and you'd need a week just to read the manual. Over the past decade the Swedes have dipped into more affordable territory, including Model:Cycles and Model:Samples, which can be picked up for under $300.

Arguably, however, the point where Elektron really hit the 'sweet spot' was with the launch of Digitakt, their mid-priced, multi-track sampler. While Digitakt is undeniably more accessible than Elektron's other sampler, Octatrack, it still boasts plenty of the depth and creativity we now associate with Elektron gear. A similarly priced and sized follow-up, Digitone repeated this but with a unique take on FM synthesis.

On the surface, Elektron's latest groovebox Syntakt appears to be a neat third entry into this range. It comes housed in a chassis that's the same size as both of those instruments, with a control layout almost identical to that of Digitakt. There is certainly a lot that's similar across the trio, particularly when it comes to the sequencing workflow. For all that Elektron gear can take a bit of getting used to – and there are still plenty of eccentricities on show here – prior users of Digitakt and Digitone should find themselves instantly at home with this new Syntakt's layout/design.

A grand release

What makes this more than simply a synth-minded version of Digitakt, though, is that Syntakt sees Elektron returning, at least in part, to analog sound generation, in contrast to the entirely digital designs of Digitakt and Digitone.

In terms of its sound engine, Syntakt has a lot in common with Elektron's Analog Rytm, not only in its use of analog percussion synths, but also in the way it uses distinct 'machines' to generate different types of sound. However, whereas Rytm balances out its analog elements with sampled hits, Syntakt combines analog synthesis with FM-derived digital generators.

There are 12 tracks in total here, of which four are analog and eight digital. In all cases, each track can be assigned one of several 'machines', which are effectively base presets specializing in a certain sound type or synthesis style.

Overbridge

Elektron's Overbridge has been around since 2015 and – following a long beta phase and a slow rollout – is now at version 2 and working better than ever. Effectively, Overbridge lets any piece of Elektron gear function as a plugin in your DAW, with full streaming of audio from/to the hardware via USB, along with total recall of all parameters.

From a studio point of view this really adds to the usability, as it lets users individually output every channel, including the effects block, for individual processing, all without affecting any analog I/O on your audio interface. It also means that almost all of the synth's parameters can be automated and modulated like any other VST, depending on how your chosen DAW is set up.

Overbridge's interface is nicely designed too. If nothing else it offers a clear and understandable layout of what's going on under the hood of Syntakt.

The analog tracks are divided into three drum tracks and one cymbal track. The drum tracks can each make use of a selection of 16 machines, which include a variety of kick drums, snares, rim shots, a pair of tonal synths, and noise and impulse generators. The cymbal track offers 12 machines, covering assorted hat and cymbal types, plus noise and impulse again.

The digital tracks, meanwhile, are identical, with 11 machines covering kicks, snares, cymbals/hats, claps and percussion, plus a selection of five tonal instruments. These digital machines are FM-based, derived from those found in Model:Cycles, albeit adjusted to offer a little more control over sound shaping and match Syntakt's signal flow.

While each machine is preset-like in its basic setup, each has up to eight adjustable parameters that can be controlled from Syntakt's Synth view. The precise setup of these changes for each machine, but they generally offer decent depth in order to adjust the tuning, shape and timbral qualities of each sound. Beyond this synth section, each machine follows a broadly similar signal path, first through an overdrive module, then resonant multimode filter and into an amp.

Each machine also has its own ADSR envelope to shape the filter cutoff, an envelope – switchable between ADSR and AHS – for the amp, along with two flexible LFOs that can be routed to pretty much any parameter in the signal flow. You'll find that Modulation can also be routed from external MIDI sources such as velocity, aftertouch and pitchbend.

There are a few small but key differences between analog and digital tracks. For the former, the machines, overdrive, filter and amp are all analog, but controlled by digital modulators and accompanied by a digital noise generator. The digital tracks are end-to-end digital, and add in a second base-width filter before the resonant filter. Every track can also be switched to become a MIDI machine, where the sequencer outputs to external gear rather than sequencing the internal engines.

> "Overdrive is great; Syntakt is capable of some brilliantly meaty, saturated drum hits"

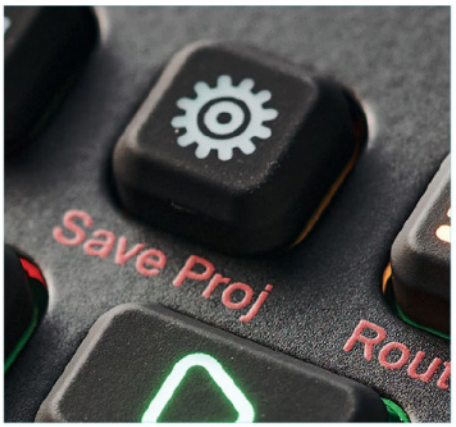
Although percussion is Syntakt's obvious focus, there's a lot of sonic range available from the full line-up of machines. On the drum side of things, the balance of analog and FM covers everything from classic x0x-alike tones to modern metallic percs and gritty, noisy hits. The inclusion of multiple types and sources of overdrive is a great touch, and particularly in the case of the analog machines it means that Syntakt is capable of some brilliantly meaty, saturated drum hits. To point out the obvious, Syntakt's overall sound leans toward the synthetic – don't expect the sort of realism you'd get with a sampling drum machine, particularly when it comes to the crisp, metallic cymbals. Within the remit of synthesized percussion though, this is one of the most versatile machines going.

Elektric Boogaloo

That flexibility reaches into more tonal and melodic realms too. There's plenty of creative fun to be had by ditching the percussion parts entirely and using only the tonal generators to create purely melodic patterns. Used as such, the analog generators can double as remarkably meaty two-oscillator monosynths, while the digital generators can create chord stabs, crunchy bit-crushed melodies, tuned percussive hits and 'swarms' of six detuned oscillators, which work wonderfully for throbbing pads and drones.

Alongside the sounds themselves, Syntakt packs a solid complement of effects. Each track can be sent to reverb and delay auxiliaries, which will be familiar to users of Digitakt and Digitone. While these aren't the most versatile effects out there, each has controls for adjusting the timing, plus filters for shaping the output.

Syntakt also features a separate analog effects channel, which combines an additional drive circuit with a resonant multimode filter, along with its own envelope-controlled amp section. The effects track also has its own filter envelope and two LFOs routable to any of its parameters. Any of the other tracks can be routed here, and it gets its own virtual output when used with



Overbridge [see boxout]. As mentioned, the various sources of drive and distortion are the stars of the show, but it's a well rounded set of happening tools altogether. A master compressor and EQ would be nice, but you won't feel hard done by.

Sequencing workflow is characteristically deep and creative. As with Digitone and Digitakt, the 64-step sequencer boasts full per-step parameter automation, probability and conditional triggers, and plenty of flexibility over playback speed, individual track lengths and step micro-timings.

One thing worth mentioning is Syntakt's Modifiers. These are a pair of modes that let users play any sound combined with up to four preset parameter changes. Essentially these let users trigger multiple alternative versions of each sound. It works particularly nicely for jamming with different chord shapes or bursts of reverb and delay-heavy percussive FX. Along with these, the sequencer also has retrigger and velocity modifiers, the first of these creates a quick way to generate rolls and fills across four different beat divisions, while the latter lets users quickly trigger four different levels of velocity. Syntakt's effects track has its own sequencer lane too, where users can input triggers for the track's LFO, amp envelope and/or filter envelope, with the same probability controls as the other tracks.

Although Syntakt is an obvious counterpart to Digitakt and Digitone, it's also a bit like a greatest hits for Elektron, with many of the features that made its two siblings so popular but sounds and effects that build on elements of the Analog Rytm, Model:Cycles and even Analog Heat. Overall, it's possibly the most versatile of the Tone/Takt range, yet it feels like the most immediate and streamlined too – largely because it benefits from inheriting all the sequencing tweaks and refinements that have been added to its counterparts across various firmware updates.

I'd argue its biggest drawback is the lack of analog outputs, with just two main outs and a headphone output on the rear panel. This leaves no option for individually processing the 12 tracks when used in a purely hardware setup, although Overbridge offers a simple way around this for studio use and laptop performances.

Minor drawbacks aside, Syntakt may just be the best groovebox you'll find for (just) under $1,000 right now. ■

THE ALTERNATIVES

KORG
Drumlogue
$600
Also blending analog and digital, Korg's new drum machine is slightly less slick, but it's also cheaper
korg.com

ELEKTRON
Digitakt
$850
Syntakt's sample focused sibling has a similar workflow and form factor, but with a different sonic remit. They pair nicely
elektron.se

ROLAND
TR-8S
$750
Roland's drum machine pairs faux-analog sounds with samples and basic FM percussion, creating a very broad palette
roland.com

Cherry Audio

GX-80

$59

www.cherryaudio.com

By Dave Gale

Strengths

+ Extraordinarily comprehensive model of the CS-80
+ The parameters are clear and concise
+ 1,000 onboard presets

Limitations

- We'd love a hardware ribbon controller to go with it! Who wouldn't?

Cherry Audio's latest behemoth-of-a-synth is a plugin for a utopian future, exclusively from the vintage past...

According to the fine folk at Cherry Audio, one of the most requested instruments for re-styling in software is the '70s iconoclastic synth from Yamaha, that continues to be the stuff of legends.

Upon opening the GX-80 for the first time, it's an impressive beast — there's an undeniably busy panel of faders and buttons, albeit in a virtual form, which adopt the identifiable persona of the Yamaha CS-80. It's all there, right down to the ribbon controller, which resides just above the keyboard. Play a note and apply a pitch bend, and you will see a virtual outline of your finger traverse along the ribbon. That's such a nice touch!

There's quite a bit to get your head around with the GX-80, but with the provision of 1,000 presets, inspiration is quickly around the corner, and with a control panel this elaborate, it would be daft not to get your virtual hands dirty and explore.

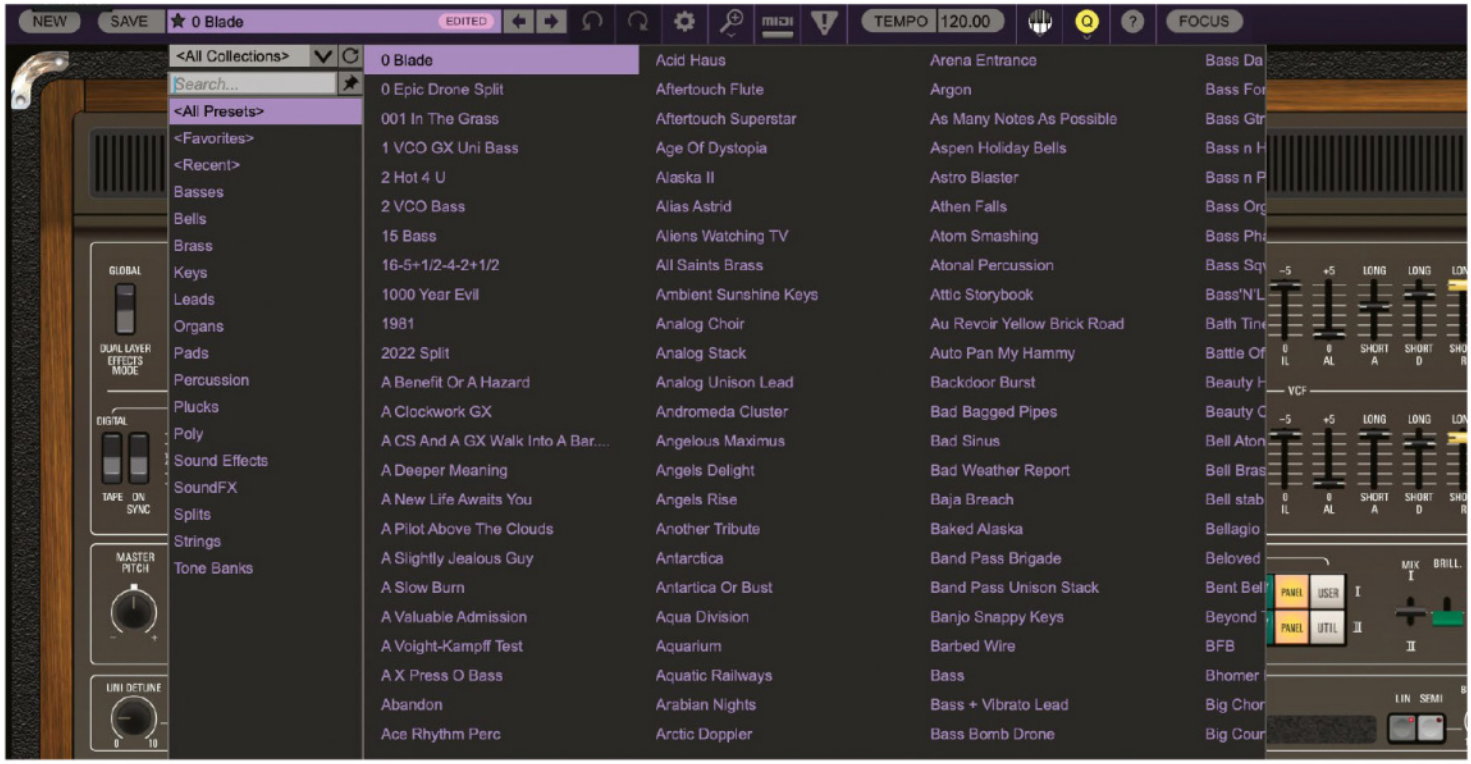
As Cherry Audio have previously demonstrated through other plugins, the included Focus mode feature enhances engagement brilliantly, immediately enlarging your area of work. It's very welcome here, as the panel is bedecked with editing content, and using Focus allows you to do exactly that.

As you delve deeper, you become aware that this is more than a CS-80 clone. Work began on this plugin well over a year ago, but it became apparent quite quickly that going further back in Yamaha's history could be an enticing prospect. Hence you will find reference to a GX-type filter, which relates to additional elements, added from the Yamaha GX-1. Cherry keep the CS-80 construct, but add those extended GX niceties, which are differentiated with an orange coloring. These are mainly confined to filter variants, but the timbral color options are useful, adding more to the palette.

The sounds of Tyrell

The CS-80 has become so synonymous with certain artists such as Vangelis, it is difficult to ignore the temptation to immediately break out into full *Blade Runner* mode. No

> "Cherry Audio have created the most impressive visual and sonic spectacle available in software"



surprise then, but the first patch in the preset bank is called '0 Blade'. Bolstered by an impressive set of on-board effects, it does sound enormously gratifying. Load the GX-80 in its standalone format, and you can get lost in your playing in a matter of seconds. The initial tone selections and patch starting blocks hark back to a vintage age. The sounds, which could be regarded as dated, present a glorious charm which is undeniably engaging.

The full flight case

The editing and programming side of the GX-80 is relatively uncomplicated, comprising of two oscillator components per voice, which are summed to create a patch. Where this begins to demand your time is with the bewildering number of filter and modulation settings that can be utilized. It's clear and concise, but there is just an awful lot to take in. However, it does not take long to get to grips with the basics and find your inner programmer. Then it's possible to layer and split your workings, as if the GX-80 didn't sound huge enough already!

If ever there was a synthesizer to model in software, the CS-80 would be high on the agenda, and not least of all due to the excessive weight of the original. As usual, Cherry Audio have taken a concept, extended it and elaborated upon the original machine, and created the most impressive visual and sonic spectacle available in software. It is an impressive beast on all fronts, with the ability to sound soft, elegant, engaging and enormous, in equal measure. ■

Programming in practice

We can't lie, we have seen products like this before from other companies. Some have felt a little confusing, in no small way thanks to the complexity of the interface, which has felt fiddly to use with a mouse on screen. From the outset, Cherry Audio's Focus mode gets around this problem, immediately zooming the area that you wish to work on, while also allowing for quick and easy moving around, while in a zoomed state. The net result is that GX-80 is incredibly easy to use, while right-clicking throws open the option to assign a fader to MIDI CC. The only problem with this is that there are so many filter options that you may well find yourself running out of MIDI faders very quickly. Notwithstanding, this is one of the best examples of a synthesizer plugin that invites you to learn its attributes, inside and out. Move away from the presets, and get creative, and the sonic rewards can be huge, much like the sound of the original CS-80.

THE ALTERNATIVES

UVI
CS-M
$86
The CS-M collection contains sampled examples of the Yamaha CS-20, 40 and 70 in one package

ARTURIA
CS-80 V
$216
A now-tidier interface, layered with the usual icing of Arturia effects for pure CS-80 charm

Audified

Linda IronVerb

$99

www.audified.com

By Jon Musgrave

Strengths

+ Simple interface
+ Choice of six algorithms
+ Powerful and unusual Ironize control
+ Great for flavorsome reverb effects

Limitations

- Limited advanced editing parameters on offer

Algorithmic reverbs are widespread, affordable and sometimes a bit uninspiring. This latest design attempts to redress the balance

Linda IronVerb (AU, AAX, VST3) is an algorithmic reverb and the second plugin developed by Audified in collaboration with mixing and mastering engineer Martin Linda. The reverb features a number of familiar parameters including Size, Predelay, Modulation and Damping, and at its core are six quite distinctive algorithms (Flutter, Plate, Slapback, Dense, Steel and Steel 2) as well as two room size options (Normal and Long). The plugin takes its name from a rather intriguing adjustable modulation parameter, Ironize, that imparts a smooth metallic character to the sound.

Before we look at how the Ironize option sounds in use, it's worth saying that IronVerb's focused feature set is incredibly straightforward to use. Over on the left you can adjust the core algorithm. Size settings vary from Small to Big, and this combines with the Feedback parameter, which sets the regeneration of reflections. Although there are no numbers here, with maximum settings for both you can achieve rich dense reverb tails well in excess of 10 seconds. You can also tailor things with the Predelay (0 to 500ms) and stereo Width control. Over on the right, the Hi-Pass works in conjunction with the Reso control to help clear out unwanted low frequencies and can be particularly sharp at higher resonance (Reso) settings. Meanwhile, with frequency settings ranging from 100Hz to 15kHz and an adjustable damping amount, the two Damp controls can tidy up the top end.

The Iron Lady

IronVerb's modulation section includes regular LFO-based modulation with Mod Amp and Mod Speed controls, and also the Ironize parameter. All three can have a significant impact on the sound, and if you're after an obviously pitchy outcome, the two main modulation controls are simple but effective. The behavior of the Ironize control is less easy to categorize. With longer reverbs it has a smearing effect, so for example with the Slapback algorithm, as you increase the

"Linda IronVerb is a treasure trove of flavorsome reverbs, ideal for short-to-medium-size spaces"

Algorithms

Although it's great to have adjustable parameters and a decent batch of presets, a reverb's success really boils down to how well it works in context. IronVerb's algorithms definitely fall into more colored territory, and this is particularly true of Flutter and Slapback, both of which focus on the early reflection aspects of the reverb. If you're after a straight-up rich effect then Dense fits the bill. Meanwhile, the two Steel algorithms are based on a steel barrel-type effect. Of the six algorithms, Plate is probably the nearest to a run of the mill algo reverb, but even this with its vintage leanings is pretty colored. You won't find any typical hall or church-type effects, and although the plugin is perfectly capable of longer, more expansive sounds (and there are plenty of presets to prove it), it's the rich sounds that it excels at.

Ironize control the very obvious early reflections gradually blend away and with Ironize at max you have a much thicker sound. Turn it up on either of the Steel algorithms, and the original thinner effect becomes denser and less bright. With short Size settings the effect is far more ringy, and this is where it reveals its modulation characteristics. This is particularly obvious with the two Steel algorithms, and it's very noticeable with shorter reverbs that winding up the Ironize effect will also extend the audible tail.

Looking for Linda

IronVerb includes 70 categorized presets that successfully demonstrate its sonic capabilities, and the vast majority deliver plenty of flavor. There are some excellent drum presets, and if you're after dense, short reverbs to complement classic boom bap sounds (Drum Medium Room) or bright short effects to liven up snares (Snare Smash 2) IronVerb is instantly pleasing. If you want longer effects you'll find some make excellent use of the Long room setting (Pad Long and ShoeGazer Ending), and these can easily be tailored using the Feedback and Ironize parameters.

Overall, Linda IronVerb is a treasure trove of flavorsome reverbs and is ideal for short-to-medium-size spaces. In terms of pure parameter flexibility it may not be as tweakable as many algo reverbs we've tried, but the algorithms are well tuned, and certainly very useable. ■

IronVerb's preset library includes some fabulous drum-focused examples

THE ALTERNATIVES

VALHALLA
VintageVerb
$50
Classic reverb sounds combined with a simple interface, and all at an amazing price – job done

JMG SOUND
Hyperspace
$142
If you like to get creative, then this highly-flexible algorithm-designing reverb is an excellent choice

IK Multimedia

Tone X Capture

$288

ikmultimedia.com

By Andrew Price

Strengths

+ An easily set-up bridge that connects your hardware world with IK's guitar ecosystem for two-way communication
+ Creating a tone profile from the input signal is refreshingly straightforward, and the AI-constructed results have to be heard to be believed
+ Huge array of additional tone profiles, and further editing can create heaps of new sonic combinations

Limitations

- If you want the most detailed model of your tone, it might take a while...
- Requires you to own a healthy assortment of jack leads and XLRs (which most of us do, to be fair)

IK have come up with an easy way for guitarists to feed hand-crafted guitar tones into an amp and cab sim ecosystem

Many guitarists spend hours experimenting with pedals, amp settings and core cabinet-miking zones to produce a tone that suits. With the advent of top-flight amp/cab simulators, and dexterous effect-chain modeling in software (notably, IK's own AmpliTube) it's now easy to do this entirely in the box.

To the ears of some holdouts, however, these software-sculpted tones might lack bite, gain and, crucially, the venue-filling results that their own hardware has already yielded. Heeding these desires, IK Multimedia have created a new hardware/software combination with the express intention of analyzing the particular qualities of an external signal chain for software replication. Then, the particular tone of your pristine hardware can be called on, whether in the studio or onstage.

This new bridge between two worlds comes in the shape of IK Multimedia's Tone X Capture. This small, strongly constructed I/O box enables you to feed your amplifier (or pedalboard) line-out into your interface and record the incoming signal, before some intelligent on-the-fly AI modeling software renders a multi-dimensional virtualization of your tone. It can also be used as a nifty re-amplification device, taking a line out signal from your interface and outputting the results with your chosen amp.

No tone unturned

It's really Tone X Capture's rig-catching capabilities that we're keen to test. Coupled with IK's accompanying Tone X software suite, the combo of hardware and software presents the most complete universe for injecting tones out of the real world and into our hard drives that we've yet seen, particularly when run within IK's guitar hub, AmpliTube.

The software itself comes pre-loaded with previously captured tone models, all of which have harnessed the company's proprietary AI Machine Modeling tech. While these are varied, they're nothing short of substantial,

"The accuracy of the Advanced modeling of Tone X Capture was stunning"

yet it's our own home studio guitar tone we want to save.

I know IK

Once wired up (instructions can be downloaded) the software does a simple test and sends your rig a specially prepared file. Before it can build the virtual version of the tone, the software asks you to choose from a Fast, Default or Advanced model; once done, we're presented with a fully playable version of our tone. For us, the valve-driven beef of a delicately EQ'd Marshall JCM200 is now fully explorable in our MacBook, while our actual amp sits unplugged.

While the gain and length of feedback decay often goes hand-in-hand with cranking up the volume, the Tone X Capture has an all-important attenuator knob, which can neatly take in the richness of our full frequency tone, while offsetting a fair deal of the volume.

The accuracy of the Advanced modeling was stunning. Saved tones and profiles can be uploaded to IK's ToneNET cloud repository, facilitating sharing of rigs and unique setups. The hardware/software bundle provides a brisk route to satisfying that long craved-for itch for taking your prized amp tone into the digital domain. ■

ARTURIA
MINILAB 3

Arturia

MiniLab 3

$105
arturia.com

By Jon Musgrave

Strengths

+ Quality construction and stylish design
+ Good DAW support
+ High quality smooth knobs and faders
+ Great Arturia Analog Lab integration
+ Pressure-sensitive, backlit pads
+ Excellent value

Limitations

- Not necessarily worth an upgrade, if you already own a MiniLab MkII

The popular mini keyboard controller is back with a refreshed new look and eco-friendly design

MiniLab 3 is the latest incarnation of Arturia's 25-minikey MIDI controller keyboard. Available in black and white versions, it has the same footprint as the MkII and weighs the same, but now has a slicker overall look. It's also made with 50% recycled plastic and a 5-year guarantee. The new overhauled top panel is now graced with eight ultra smooth continuous controllers, four sliders and a mini display with accompanying push action rotary encoder. You also get eight velocity and pressure-sensitive RGB backlit pads with a 2-bank configuration. The MiniLab 3 keyboard has an excellent positive action that's consistent across the keys with minimal mechanical noise. The pitch bend and mod wheel are the touch-sensitive slider type and these work incredibly well. It's also great to see polyphonic aftertouch generated by the pads and this dovetails with many patches in Arturia's Analog Lab (the Intro version is in the software bundle). Above the pitch bend are four buttons including Shift, which combine with the pads and display for further onboard features including chord memory and the arpeggiator.

Connectivity and power is via a USB C connector and the box includes a 2m USB C to USB A cable with handy angled USB C plug. On the back there's also a 5-pin MIDI out and a ¼" pedal controller input. The controller input can be configured for sustain, foot switch or expression, and these settings along with many others are handled via Arturia's MIDI Control Centre application (Mac/PC).

The build quality is impressive, but it's also important that it integrates properly with your software, and this is an area that Arturia have focused on. MiniLab 3 has two factory modes (DAW and Arturia) and five user configuration memory modes and also supports Mackie Control protocol. In DAW mode, four of the eight pads combine with the Shift button to provide transport controls, and there are also DAW-specific scripts that extend the DAW mode features. This worked particularly well for Live, with pads assigned to clip and scene functions, and sliders controlling track, pan and send levels.

Arturia mode is designed for use with their Analog Lab and offers an excellent integrated experience. The mini display handles preset browsing, meanwhile knobs and sliders on the Analog Lab layout match the MiniLab 3 layout, with parameters including brightness, timbre, effects levels, master EQ and output level. Switching between modes and user memories takes only two buttons and the overall experience is super slick.

For new users it's definitely one of the best in its class and offers top value. Plus, there's an excellent software bundle too! ■

Modalics

Beat Scholar

$84

www.modalics.com

By Andy Price

Strengths

+ Beat-slicing concept works well
+ Endless ways to divide and subdivide
+ Intuitive sampler, with drag and drop
+ Easy to get started

Limitations

- Deeper drum sound designers are out there

Will Modilacs' debut plugin take the prize for most refreshingly innovative piece (or should that be slice?) of software we've seen for beat creation?

For those not rhythmically inclined, beat-programming can often be an arduous process. While some opt for a robotic, metronomic approach, those who crave the type of humanity and improvisation in their patterns that a real drummer can bring to table very often find themselves spending far too long trying to coax their drum sounds to get a life. Results can often be mixed.

It's for these people that new company Modalics have framed Beat Scholar, their debut plugin. Founded by well-versed industry specialist Eyal Amir and respected bass playing heavyweight Or Lubianiker, Modalics' first release is founded on a new spin on the beat-slicing concept. Instead of slicing a sample sound into constituent, playable beats, Modalics slice up each beat within a set pattern, keeping the set rhythm intact, yet suffusing it with more and more variation and room for manoeuvre.

Their particular slicing concept is similar to say, a pizza where some slices are pepperoni and others vegetarian – technically, it remains one pizza in essence, but with an array of flavors.

You might think that we're going a little off-piste with that culinary analogy, but it's this 'pizza-minded' idea that has actually been pivotal to building Beat Scholar, with its UI displaying a variety of circles (or pizzas, as Modalics do in fact typically refer to them) which can be sliced into up to 42 times, with each slice triggering a genuinely unique drum sound, a different timed rhythm or additional samples within the hit, as well as the core drum sample.

Stuffed crust

Playable as a standalone instrument, or as a plugin within your DAW, the first thing to compliment Modalics on is the sense of vivid fun that the UI immediately gives off. Its color-coded drum pads, and the pattern area automatically fire up in a preset mode, demonstrating right off-the-bat how the sliced patterns sound when expertly arrayed.

"Making beats sound less programmed and more organic has rarely been as joyously fun"

Algorithms

While bending our beats into quirky and off-kilter patterns is now a doddle thanks to the slice-and-dice interface of Beat Scholar, further humanity can be injected into your beats via the in-built swing slider. Alternating between positive and negative swing values, you can get a more realistic sense of a teetering pair of hands helming the beat, even when neatly laid within your sequencer. To make grooves that are more aligned with your music's feel, 1/8, 1/4 or 1/2 swing reference values can be chosen and either applied subtly, or if you're feeling particularly adventurous, why not go the whole hog and ramp it up (or down!) to its maximum/minimum level. Extreme negative swing values often have to be heard to be believed, but can lead you down some interesting rhythmic pathways, and totally switch flat-sounding patterns into more interesting variants, particularly those constructed from your own samples or found sounds.

The top toolbar presents the global functions and editing tools, while down at the bottom the Kit Module gives access to the source sounds on which you can place the pattern module either entirely, or per-slice. Color co-ordination makes this process a lot simpler than a lot of more mathematical drum programming suites.

To the right of this area sits the Sounds Module, where you can further shape the timbral quality of the currently selected sound, via sample and attack controls. You can also impart character-enhancing effects such as filtering, distortion reverb and compression. It's surprisingly deep for something so straightforward to use.

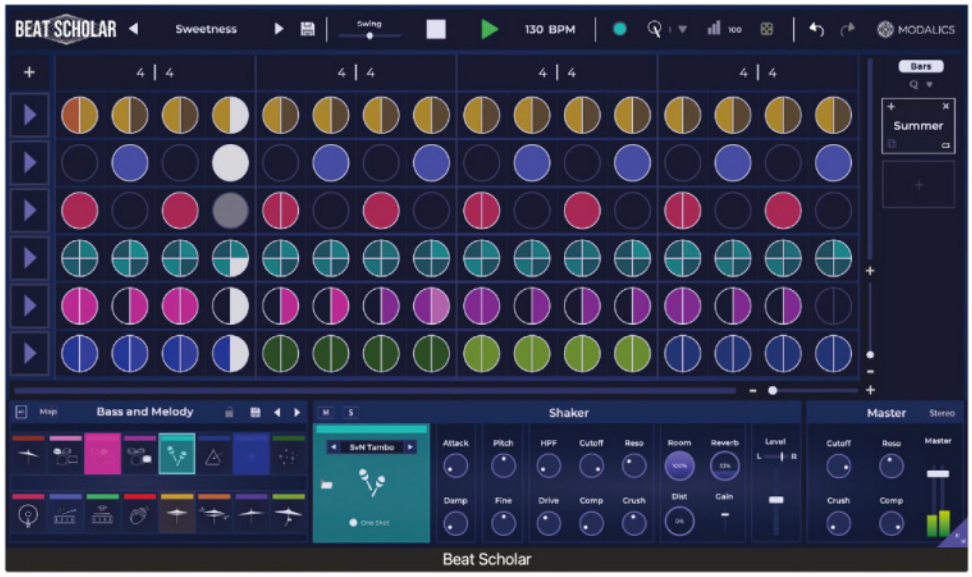
In practice, the array of permutations you can instil into your beats is soon apparent. From adding subdivisions, quarter notes and oddball hits, creating odd little rounded out micro-fills to the end of patterns to triggering effects, noises and samples – making beats sound less programed and more organic has rarely been as joyously fun.

A beatmaker and a scholar

Beat Scholar is more than just a nifty beat-focused sampler. It also brings a huge repository of its own samples, including old-school drum machines and real-world instruments organised into genre. Each of these can be dragged and dropped to any slice of any beat in order to build out some wholly original combinations. Your own sounds can also be introduced into the sliced-and-diced world of Beat Scholar. It's massively enticing to start throwing found sounds and DIY hits into the mix.

Beat Scholar will undoubtedly be a welcome addition to the collections of producers who need to fine tune and tweak, with endless scope to minutely re-shape drum patterns over time, to get absolute precision or even its opposite – joyous freeform humanity and expressivity.

Hitting the ground running with their first product, we're excited to see where Modalics' giddy creativity will take them next... ■



The sampling area where individual 'beat pizzas' can be divided

THE ALTERNATIVES

SUGAR BYTES
Looperator
$84
16-step sample slicer with a more conventional approach to slicing and dicing recorded samples

IK MULTIMEDIA
MODO Drums 2
$158
If humanization is what you're looking for, you'll find that IK's software drummer is immensely pliant

MODERN DRUM EFFECTS

Check out today's top plugins for a modern, state-of-the-art drum sound

As technology marches on, drum processing is another ever-evolving field. Once, engineers may have made their way with a stereo pair of microphones above the drum kit, as well as a smattering of EQ and compression, but today's modern music demands a lot.

It could be pumping, light-but-complex, heavy-hitting, impactful, artful or biting drums – and it also demands the processors, techniques and knowledge to be worthy of that level of sound quality.

So how do today's drum parts tick, production-wise? One end of the spectrum requires the drums to be as powerful and full-bodied as possible, fitting other instruments in around them. Another end sees other instruments take over, leaving sparse drums that have to make use of the room they're left with. Either way, you'll need to know how to use your tools to make everything work.

That's where this Masterclass comes in. Over these pages, we'll take you through some of the most essential techniques and tools for getting a modern drum sound. From basics like multiband compression that were once envelope-pushing supertools, to modern treatments for layering, stereo enhancement and sophisticated reverb processors. So grab your tuning key, limber up, and chalk up your hands for some... dragging into your DAW!

Processing a drum buss with multiband compression

Multiband compression is one of the finest tools easily available in the digital world. Whereas once we had simple compressors, today we get to have several – one for every band of the frequency spectrum. For lows, low-mids, high-mids and high frequencies, or more if your particular multiband compressor allows them, you can dial in different thresholds, ratios, attack and release times.

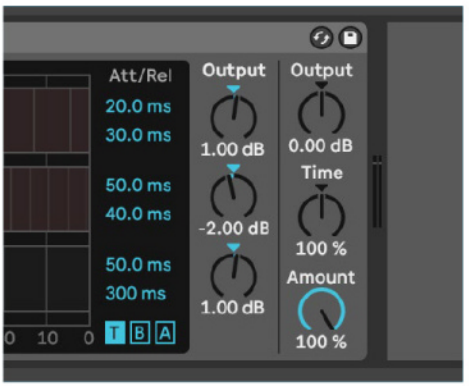
Multiband compressors are often used in mastering, and another place you will see them shine is when placed on a drum buss. Here, the broad range of different frequencies on display, plus their different transient profiles, makes multiband dynamics processing a slightly obvious but very effective choice.

The first step in using a multiband compressor is often in fine-tuning the bands you have available. Solo a single band and listen as you adjust its crossover frequency (or crossover frequencies). What tonal and transient elements are occurring within this range of frequencies? What do they bring to the track? Set your crossover frequencies at a point where a certain function is being fulfilled – which means weighty and powerful bass in the lows, or high-end sheen up in the highs, for example.

From here, a great way to progress in multiband dynamics is to make use of the solo and audition functions available to you. How do individual bands sound on their own, with and without processing? And how does the whole output sound with a certain band's compression deactivated? Comparisons like this will help you find your way to success with these devices.

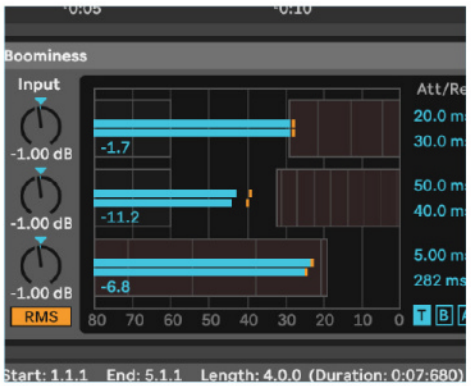
Step by step 1. Multiband dynamics processors

1 Multiband dynamics processors let you set different attack and release times for each band. In this case, we've taken a drum bus with piercing hi-hats, and given the high band a faster attack time to tame the transients. The mid band has a slower attack to let tom and kick transients through.

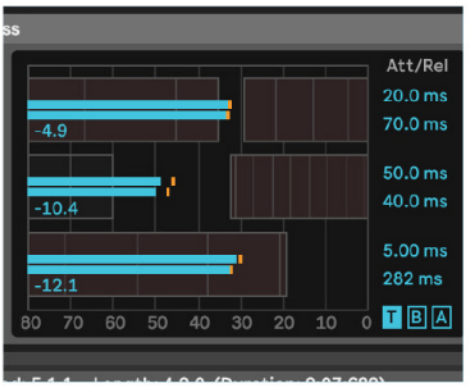


2 Use the solo buttons to listen to individual bands and fine-tune your processing. While the tom's transient shape is now much more pronounced, the overall level is too loud. To adjust this, we can use the output gain on the right-hand side of that band.

3 The bodies of the kick and toms are clashing slightly and causing some boominess in the low end. We can use Multiband Dynamics to apply downward expansion to our low end, which reduces the level of everything below a certain point, essentially acting as a gate.



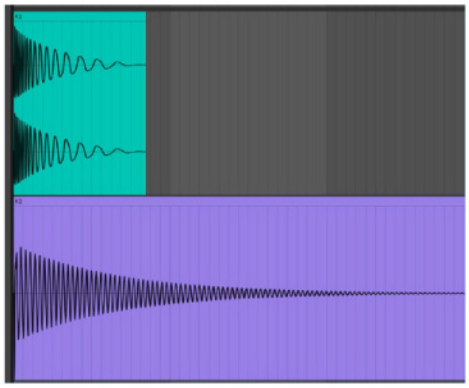
4 Click B to enter the before view, then adjust the threshold until only the peaks exceed it. Then reduce the Ratio until you can hear the sustain of the low end reducing. Set a fast Attack and adjust the Release until you hear the desired groove in your low end.



5 You can use the same technique on the high end to attenuate unwanted high frequency noise, such as room noise, tape hiss and vinyl crackle. You may need to use shorter release times to achieve the desired effect, though.

6 Multiband dynamic processing can be a difficult technique to get right, and it's quite easy to go overboard with the sound. That's not always a bad thing, though. In this case, we've gone nuclear with the parameters, then we've dialed back the mix amount to reintroduce some of the dry signal.

Step by step 2. High-passing kicks with Iceberg Audio Sub Cut



1 While there are a near endless number of kick drums out there, sometimes you just can't find your Cinderella sample. For these occasions, combining the transient from one kick with the body of another lets you conjure up the perfect kick. Iceberg Audio's Sub Cut can help you to do just that.

2 When layering kicks, the combined subs can create phasing issues and muddiness; a real mixing nightmare. Sub Cut lets you precisely remove the low end from one of your kicks, giving your other kick room to breathe. Load Sub Cut onto the kick you want to remove the sub from.

3 A spectrum analyzer shows that the fundamental frequency of kick two is around 75Hz, so we know to cut below that point on the first kick. Sub Cut's central dial adjusts the cutoff frequency, and the readout tells you the frequency as well as the note you're cutting at.

4 Try all three filter slopes to see what sounds best. You can also audition the frequencies being cut by toggling the S icon. You may also want to remove the transient information from the second kick using a fade if it is clashing with the transient from the first.

Sidechain successes

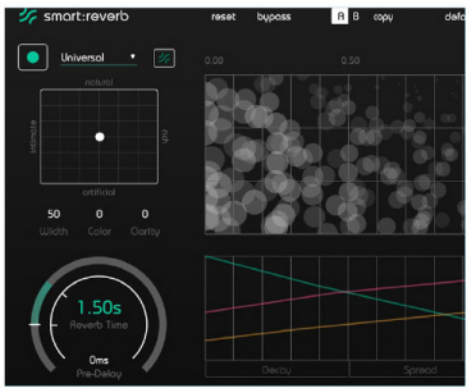
We know about sidechaining, the practice of routing another track to a compressor to feed its detector circuit; but have you ever tried duplicating the track you're compressing, using the duplicate as a sidechain signal and then processing it? You'd be forgiven if not.

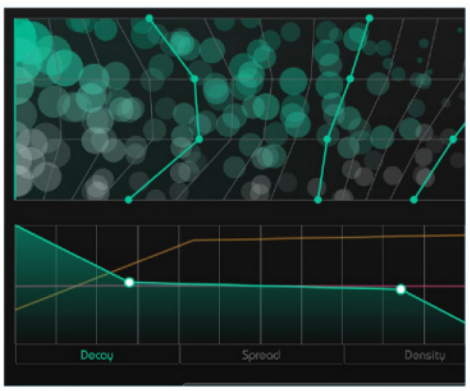
While it may sound esoteric, this technique allows things like sidechain EQ, where the compressor you're using doesn't offer it. But what about something like delay? By manually delaying your sidechain, you can add a delay before the compressor's attack kicks in. You can even compress the sidechain signal itself!

You can even move and chop the 'trigger' copy to add lookahead, and tweak the sidechain differently at different points through a track. How about reducing the gain at one point, adding an EQ boost in other, and completely dropping the sidechain triggeer out elsewhere? And it doesn't just work with compression, try it with gating sometime too!

Try duplicating your drums' signal onto another track before using it to drive a sidechain compressor on the original – get processing for ultimate flexibility

Step by step 3. Modern drum reverb with smart:reverb





1 Let's use sonible smart:reverb to add a modern reverb sound to a house beat. Start by loading smart:reverb on the drum group. smart:reverb is one of sonible's many audio tools that incorporate AI to help you make mixing decisions, but in this example we'll be doing everything manually.

2 Filter the incoming audio so nothing below 200Hz gets through. Set the reverb time to 0.5 seconds and the pre-delay to 13ms. smart:reverb gives control over the character of the reverb via an X/Y pad. For our modern style reverb, we'll set the reverb to artificial and rich.

3 Finally we'll take advantage of smart:reverb's unique spectral decay editor. This allows us to change how areas of the frequency spectrum decay over time. Here we'll limit the high and low frequencies at the start of the reverb tail, but as it progresses, open up the high frequencies for some nice air.

Mid/Side EQ

Drums carry a lot of a track's crucial properties: there's transient information that makes everything pop; there's tone and pitch that extends right from the low bass drum to the sheen of crash cymbals; there's the room sound that's particularly audible with loud and quick impulses flying back and forth; and of course, there's stereo information – both from the sound of the room and the panning of the individual kit elements.

That stereo side of the equation has become a big part of modern music thanks to digital sound-sculpting tools that can use mathematics where only electronics were available before. These days we can analyze the stereo field, check phase correlation, work any processing into a mid/side technique, and show the full stereo panorama in all its potential glory.

Here we'll look at some mid/side EQ processing on drums, using FabFilter's Pro-Q 3, which lets us make particular EQ bands work on either mid or side portions of the signal only. Mid/side was originally a recording technique, but is now a mixing and mastering definition for processing a signal based on two components: its Mid information, that which is the same in both speakers; and its Side (or Sides) information, that which is different between the left and right channels.

We'll show you how to wield mid/side processing in an EQ context, but there are many more ways we can use this particular signal split to our advantage.

> "That stereo side of the equation has become a big part of modern music thanks to digital sound-sculpting tools that can use mathematics"

Step by step 4. Pro-Q3 on a drum buss

1 Starting out with Pro-Q3 on a drum buss, we can create a band and set it to work only on the Mid information on the channel – that's the information that's happening in both speakers at the same time. We move the band around and pinpoint an area of snare that we can boost without affecting the wider overheads or room components of the signal.

2 Next, we'll add a nice, airy lift with a high-shelf, targeted only at the Sides portion of the signal. This helps our hats and overheads – including some of the snare's brightness to come up, without getting to those mid-panned mono channels from the original mix.

3 Next, we can carry out an essential mixing step pretty easily from our EQ – narrowing the bass frequencies to ensure they're not stereo. We can do this by adding a low-cut filter that's set to Sides only. Remember, this isn't 'collapsing to mono' as such, it's removing all the sides signal and leaving only the mono mids.

4 Another, wider and lower Mid-only band gives us more power in our kick, without affecting stereo information just above – such as panned floor toms. But let's use another Pro-Q 3 feature to take this even further...

5 By pulling down the collar around the band's Gain control, we kick in dynamic EQ on this band only, for the mid portion of the signal only. In this case, we can control the thud of the kick within the drum buss, without affecting its click higher up, or any stereo information nearby.

6 We can use dynamic bands in mid/side in other ways. We can create bands for compression or expansion, as well as gain changes, for mid-only, side-only or any other combination of stereo options given – stereo, left-only and right-only are also here.

Step by step 5. Tuning and transient shaping for harder-hitting drums

01 When you have a whole group of instruments that are intended to sound like they're coming from the same place, it can be useful to group them together and process as one entity. Once they're recorded or bounced together, though, it is tricky to process any of the elements individually.

02 In this case, we have a drum loop and we want to tune the kick to be in key with the rest of the track. First, load Waves Torque, then drag the speaker arrow in the focus bar to audition the frequency spectrum and find the kick's fundamental.

03 Now we need to adjust the threshold so that Torque is catching all of the kick hits, regardless of their velocity. The Threshold indicator light should go from green to yellow when each kick drum hits.

04 Use the Torque dial in the middle of the GUI to adjust the pitch of your kick, without adjusting the pitch of any other drum elements. You can also adjust the speed at which Torque adjusts the pitch of your kick, similar to how a vocal auto-tune plugin works.

05 You may need to dial back the level of your newly tuned drum loop using the Torque Trim and Output Level faders. The Input and Output level meters help you level match, and the clip indicators at the top of the meters tell you if your signal is too loud.

06 We can now turn our attention to the transient shape of the rest of the drum elements by loading Waves Smack attack onto your loop. The waveform gives you a handy visualization of the dynamics of your drums, both before and after you've shaped their transients.

07 The blue knob adjusts transients, while the yellow knob adjusts sustain. Start by tweaking the attack knob until you get enough knock, then you can dial back some of the sustain with the yellow knob to help your drums' groove.

08 The Sensitivity knobs act as a kind of threshold for the corresponding Attack and Sustain dials, at which point Smack Attack will start to control the transients. Toy with these to further hone in on the groove and dynamics of your drum loop.

09 For even more control over the contour of your transients, the Attack and Sustain dials each have three Duration modes. Choose between soft, medium or hard slopes to perfect your sound. There's also a mix control for dialing back the processing and reintroducing some of the dry sound.

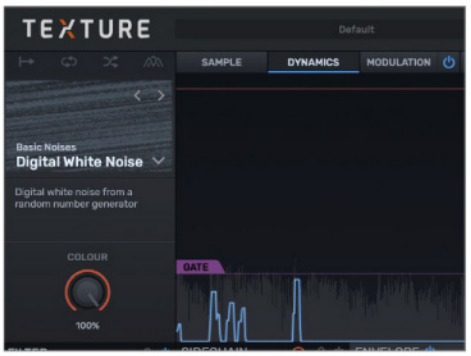
Transient pitches

How does a drum's transient work, exactly? In the case of an acoustic drum, there are two obvious components: the stick or beater hitting the drum, and the drum's initial movement created by it, before it moves to the state where it rings out as it loses energy. In electronic drums and drum synthesis, these characteristics are emulated by the stick or 'click' layer, and the fast pitch envelope of the electronic drum's main tone.

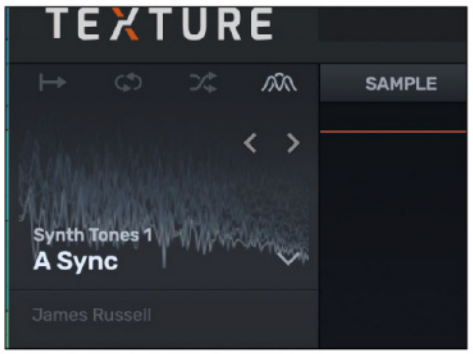
So what's a drum transient? In both these cases, the transient is marked as a higher-frequency sound coming before the body – whether that's the much-higher impact sound, or the higher-pitch ringing of the drum's membrane itself. To enhance a transient, we can bring up the level at the start of the sound, or do anything that enhances higher frequencies.

Native Instruments Transient Master is a tribute to the SPL transient designer, automatically separating transients from a sound's body, and helping you change the gain for each stage

Step by step 6. Layering with Devious Machines Texture



01 Texture is an automatic layering plugin that can reinforce an input sound with extra impact and power, or enhance an existing signal with extra creative layers. As we load it up and set the Gate, it adds a layer of white noise on top of our input.



02 We can change the sound we're adding by selecting one from the extensive library. Here, our AC Sync tone has an interesting character, but it's not exactly what we're looking for. We can change it though, bringing its pitch down to fit our sound better.

03 We can add some modulation to the properties of our texture layer, as well as some envelope-triggered modulation, over in the Modulation tab. There's also EQ on-hand to affect the texture layer, or the original, or both.

04 Especially useful for drum tracks, and buses too, is the sidechain filter. With this, you can separate out the detection of what triggers your texture layer using a filter. There's also filtering on-hand for the texture layer itself, too.

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ATAU TANAKA

Atau Tanaka creates electronic music using the movement of his own body, with custom software – and he thinks we should all try it. We catch up with the artist taking the ideas of software control and performance to a completely new level...

An electronic music setup covers anything from a simple MIDI keyboard with a laptop and headphones, to a huge modular setup, and beyond, we all know the deal as musicians. But none of this applies for Atau Tanaka, a Japanese-American artist who in performance appears to be pulling sounds out of the air through arm movements, hand gestures, and muscle tension. We talked to Atau about his setup, his extensive history with expressive electronic music, and what's coming next for music technology.

Classical, jazz, electronic...

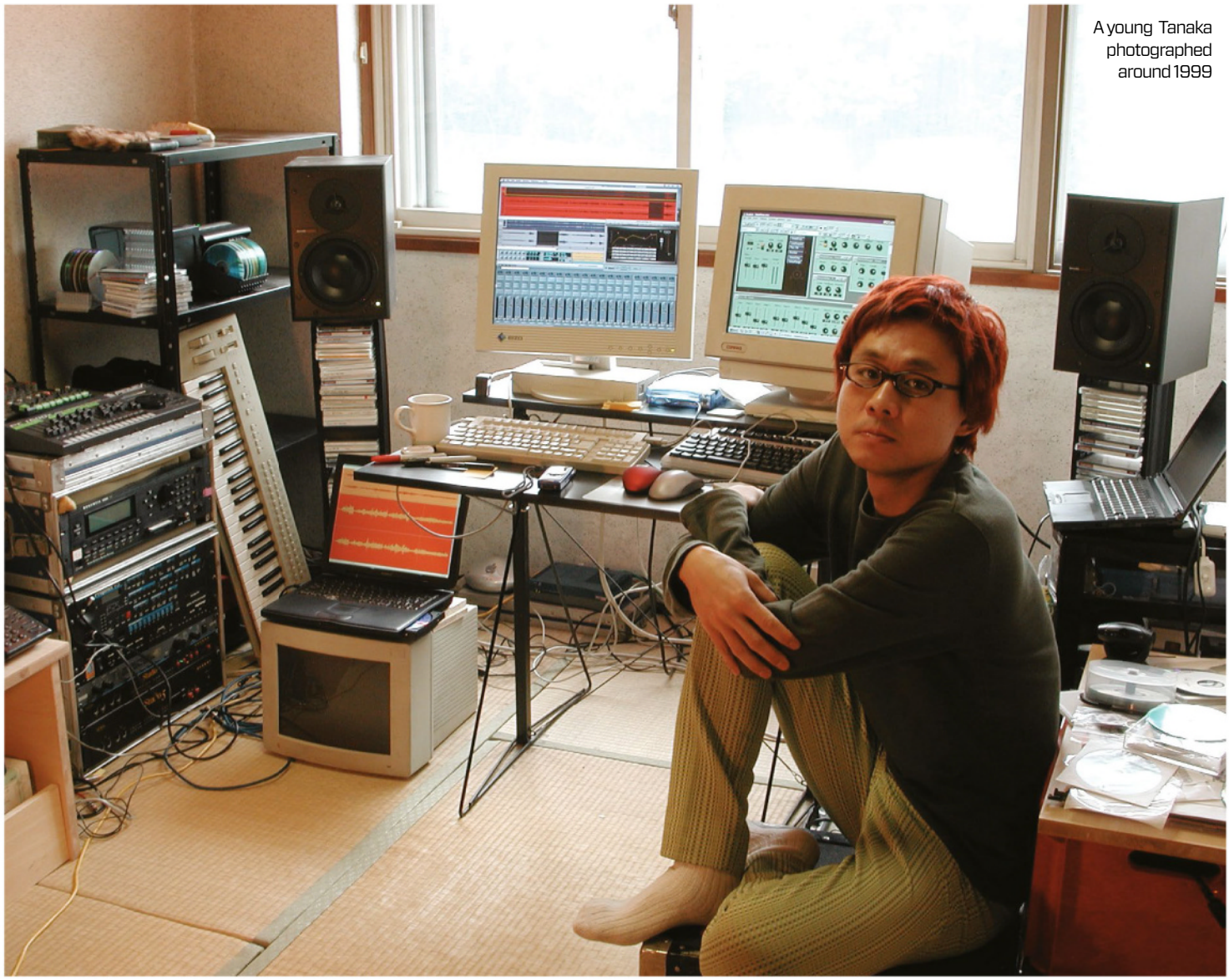
"My musical education was quite traditional. I started off playing the piano as a child, but I got sick of playing classical music in my late teens," Tanaka tells us when we ask him to tell us a bit about his musical upbringing.

"I tried to switch to jazz, but I didn't have the ear for it – so I picked up the electric guitar! In my university days I played in free improv bands – there was a club in New York called the Knitting Factory, and John Zorn played there, and Fred Frith, and I'd see gigs of theirs, and met them eventually. Then I discovered the electronic music studio at Harvard, where I was doing my university studies, and a composer there, Ivan Tcherepnin, was my mentor. And this was the early '80s, so we had open reel tape machines, spliced up tape, we had a Buchla 200 synth, a Serge modular, and I got into analog electronic music." Atau was quick to embrace the possibilities of MIDI and digital audio. "In 1984, the Mac 128k came out, and MIDI synths came out. I bought a Roland JX-3P – their first synth with MIDI. And I was always interested in ultimate controllers, you know, I was exploring the early MIDI guitar systems. That search for controllers is a theme right through until today.

"The laptop enabled me to take it [electronic music] on tour. In the early '90s, the Apple PowerBook didn't do audio – it was just MIDI, and Max was MIDI only. It would take MIDI input from Bio Muse – that was the muscle interface. And then I had a rack with a Yamaha TG77, a Korg Wavestation, and Kurzweil K2000, and I was trying to make sounds from those in a way that you couldn't get from a keyboard input. When the PowerPC chip came out in the mid '90s, you could do audio on the laptop, and Max took on MSP functions, and that's when I was able to stop using the rack, because I was carrying it on trains all around Europe on tour."

Coming up to date

Atau continues to employ alternative interfaces: "I use systems that capture body movement, and the physiology of the body. I've been working with muscle systems since my days at the CCRMA at Stanford, where I was doing my PhD. Most recently, I've been performing with a device called the Myo,



A young Tanaka photographed around 1999

Photo:: Kyoichi-Tsuzuki

made by Thalmic Labs – a bracelet that picks up muscle tension. Unfortunately that's discontinued, so we're working on a new system called the EAVI board. Other than the Myo, my setup is a classic laptop musician setup, based on a MacBook Pro, still with Max for gigs, although I've got Ableton Live and Logic Pro X on there, and I produce the final tracks in a DAW for recorded release."

In this environment of abstract, digital, music, performed without traditional interfaces, does 'classical' western music theory still have a place?

"I like the word 'comprovisation'," Tanaka replies. "It's a hybrid between composition and improvisation. If you take classical music, Mozart was a great improviser, Bach was a great improviser. And even if you play note for note, a Mozart sonata, or Bach partita, there's a huge amount of interpretation, and there's a musical energy that comes through. And I'm very interested in that."

Techno music was born from the interface of those Roland drum and bass machines – if somebody's using a custom control surface with custom software, does the music have to reflect that? "That's called 'idiomatic' music – when you go to violin, you compose for violin, if you've got a flute, you compose flute music. With digital music you can play any sound from a keyboard, but I was interested in getting back to the instrument, and what is specific for that instrument, So yes, I make my own Max patches, I design my own musical instruments. And I am the one who goes on stage to perform."

Unlike classical music, Tanaka's work must be challenging to share between musicians – there's no common scoring language, or equipment. "It's like an independent film, where you get the script and direction and the producing all done by one filmmaker," he notes. "At the same time, I am a composer who knows how to write a score and transmit a piece to another performer, and that's been done with my piano piece, recorded on the *Meta Gesture Music* album by Sarah Nichols, a British pianist. The piece exists as a score, and it's also got the Max software, all in a package, almost like a product with an installer with instructions, and the Myo interface. So Tricia Dawn Williams in Malta and Kathleen Supove in NYC play it. And we've got an Italian pianist in Antwerp, Giusy Caruso – she's the first pianist to get the whole thing running without me having to come help her. It's an important thing, I think, for us; electronic musicians have to continue those traditions of transmitting the music, through scores, but also by making the technologies that are available."

More about Myo

If you try to search online for Myo armbands or their creator, Canadian company Thalmic Labs, you'll be sadly disappointed. In 2018 Thalmic rebranded as North, and launched a pair of 'smart spectacles' called Focals. North was subsequently acquired by Google, who soon after shut down North completely. Apparently there are still Myo applications available, so if you can track down a set, you might be in luck, but that's strictly at your own risk. But what can you do with Myo, if you can get some? It's based around a system of recognizing a few basic gestures – wave left, wave right, spread fingers, fist, and thumb to little finger. It does this by reading muscle activity in your forearm, and combining this with your arm's orientation. It's been used in many situations, from controlling media players, to gaming, controlling the Sphero robotic ball, piloting drones, and even interacting with prosthetic limbs. The setup is very clean, with just one or two armbands, and a bluetooth connection to a computer. There are no external power packs or connecting cables (they have internal batteries that are recharged via USB). We would like to think that somebody will pick up this technology and develop it further. Fingers crossed.

Minimal performances

When Atau performs, he has nothing on stage, just the MacBook Pro off on one side, and one footswitch to change presets. "It is theatrical, it is intense, so I don't think I need to add anything to show off, and I'd rather not add anything artificial. I'm going for a stripped-down, minimalist presentation, so that whatever you experience, is real. I wanted electronic music to become a live medium because I was an instrumentalist. That's why I was interested in alternate controllers the whole time, MIDI systems. You could be Jean-Michel Jarre and have a whole bank of synths around you, and make a whole orchestra's worth of music, but as an instrumentalist, I wanted to play one human being's worth of instrumental music! I didn't want to hide behind racks or synths, and I want to put the body first. With laptop music performances, you can't tell necessarily what people are doing. You can do tiny things by turning a knob or clicking the mouse to produce huge changes in the sound, but it's not that legible to the audience. The great thing about electric guitar is you've got overdrive, distortion, saturation, and you can keep pushing the limit. With digital, especially early digital, if you filled up the binary bandwidth, that was it. I just couldn't push it any further."

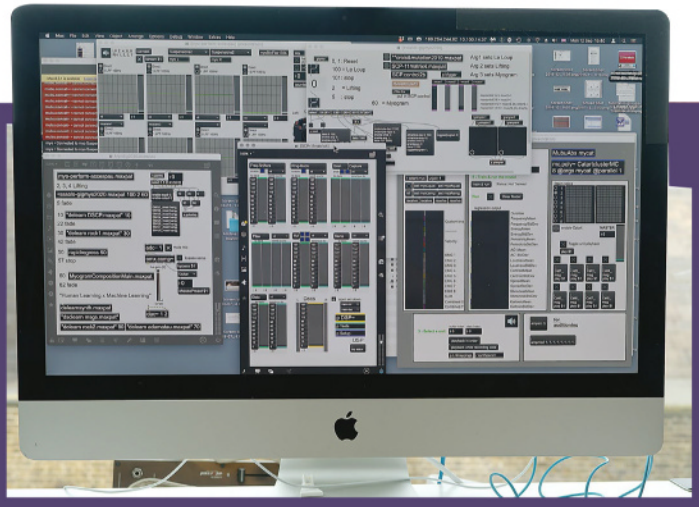
Solo versus group

Playing solo gigs is one thing, but does Atau find that something as individual as this works in group situations?

"I perform in bands and in different one-off collaborations," he replies, "and it works in different ways for each of them. We had a band called Sensorband that toured for 10 years, and in the '90s had a second band called S.S.S. And I've played in the French improvised scene quite a bit, some with filmmakers called Metamkine, and one-off collaborations, like with poet Jasmina Bolfek-Radovani. Playing in groups is a good testament to what I do, because computers are programmable, but then once you've got it programed, it does what it does – how much freedom do you have within that? If it's a band setting, you can get to know them, and so then your musical identity has a place that you can really work on; in a one-off collaboration, you have a lot less time, and on the spot you have to be able to play it in a way that can be adapted to the content of the musical context."

Atau has a minimal-looking setup, but there's a fair bit of technology at work. How and why does he think the average person can explore this for themselves?

"It's opening up a new sonic palette – synthesizers allow any kind of sound to be made, but we're sometimes limited by our imaginations. I want to open up people's sonic



Get more expressive

"Although sometimes it seems like the electronic music world is full of pads and keys, there are many ways we can break that mold and use more expressive tools, whether instead of or alongside our familiar controllers. Any keyboard with pitch and mod wheels is a start – if your software lets you assign those to different parameters in your virtual instruments, then you're off. Some keyboards have joysticks, and touch strips; Ableton's Push is a very conservative device in many ways, but it has a touch strip that can be configured to perform different tasks.

"MPE (MIDI Polyphonic Expression) is becoming more mainstream, and with a suitable controller, this adds extra responsiveness. Then there are mobile apps, using touch interfaces to add more customizable flexibility, and don't forget, those devices often have accelerometers, that apps can access to send control messages according to the orientation of the device. If you like game controllers, there are several applications which will convert incoming controller messages to MIDI commands or keyboard shortcuts that music software can use, and we still get a thrill from using the Nintendo Wii Remote Control to trigger and manipulate sounds in Ableton Live's Operator synth."

awareness. I don't expect everyone to do what I do, but I want it to be an example, to point out the possibility of doing something meaningful with new technologies. I teach in a university, and I practice what I preach, through releasing and performing my music.

"You know, the mobile phone has very sophisticated sensors? How many people actually use them to make weird electronic music? We need examples of what's possible, what's musically interesting and meaningful, but it doesn't have to be scary, and I think learning music has always been scary. And that's one of the things that I felt was always off-putting about trying to learn a traditional instrument.

"Electronic music was supposed to make that more accessible, but if it's just presets in GarageBand, and you've got a track instantly, you don't understand what you've done. I'm looking for something in between the two,

Sarah Nichols, a British pianist. The piece exists as a score, and it's also got the Max Asoftware

Kit list

Atau Tanaka takes us through some of his setup

MacBook Pro 13" 2020 running Cycling '74 Max
"My MacBook Pro is an Intel Core i7, with 32GB of RAM, and 2TB of storage – I keep about 20 years' worth of material on that machine. And because it's a studio and live machine, the RAM is super important to me."

Thalmic Labs Myo interfaces with Bluetooth LE dongle
"Although it's not available anymore, I think it's worth buying and using one if you get the chance. People might also be interested in devices like the Leap Motion, or the Microsoft Kinect."

MOTU Ultralite Mk 5 interface
"The MOTU has eight analog outputs, and it enables me to play in multichannel sound systems, with different muscles mapped to different speakers. It also has a DC coupled audio output so I'm also able to send output from my system as CV."

Mackie 1404VLZ mixer
"My setup means that no mixer is needed any more in a lot of setups, but, still, to have master volume to give analog control is good."

Dynaudio BM6a monitors
"These are powered bi-amped, 500 watts for the woofer, 500 watts for the tweeter in each speaker, so with enormous amounts of headroom, they're warm and have some depth and soul."

Sony WM1000XM3 headphones archiving
"I used to backup to DAT tape, then CDRs and DVD Rs, then to hard drives, but all these things can fail, so double backups are important. Now I'm doing online backup – Dropbox Pro is a fantastic storage and synchronization system."

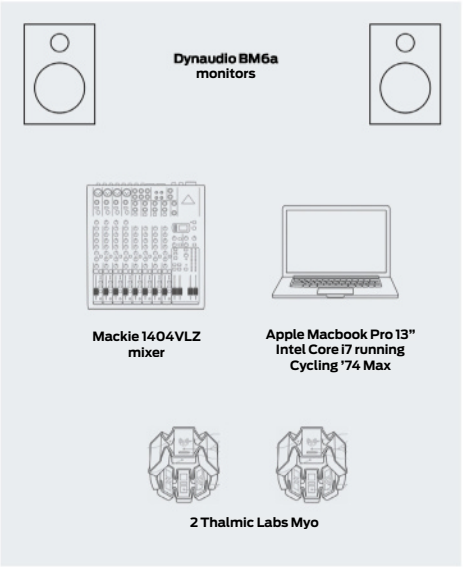
where it's engaging, it's accessible, but you start to learn about sound. If it's a route in to introducing music, as an activity, that is a real great, noble mission, you know, because there's less and less music taught in schools. And I think to get it out of the computer, the idea of a 'post-computer music' is interesting.

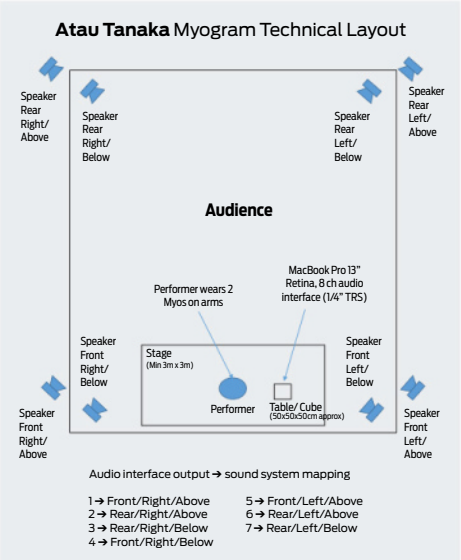
"Young people aren't interested in computers actually – the iPad or the mobile phone can hook their interest and makes it relevant. But then we have to go the next step, that if they just get locked into another app that keeps them on the screen of their phone, and you can't tell whether they're texting, playing a game or making music, then having another device that talks to the app, whether it's knobs or a keyboard, or a gesture controller, makes music embodied again, and that's really important."

Predicting tech

And then of course we're wondering what's next? "More and more use of AI technologies. I use neural networks – instead of manually mapping input to the sound parameter, a neural network can create very sophisticated mappings for you. All you have to do is give it some examples. So that's very rich, and there's a software called Wekinator, that's super-interesting, that allows you to do that with MIDI. And then Google's Magenta project publishes a lot of AI code, and has some stuff for sound synthesis. People are starting to work more and more with using AI generated sounds, or to create infinitely varied remixes.

"I'm also working with a neuroscientist, Stephen Whitmarsh, so hopefully next year I'll be performing with brainwaves and muscle.





And I'm kind of tired of having a laptop on stage with me all the time, even if it's off to the side. I'm interested in post-laptop music, and the Raspberry Pi is an obvious interesting avenue. And that's one reason I'm also interested in working with Martin Klang on Rebel Technology hardware. His OWL framework gets a lot of those languages like Pure Data, and FAUST running on pedal boards. With embedded computer music, different instruments do different things, and everything doesn't even have to be in one computer. They're like analog modular synths, dedicated boxes, but reprogrammable." ■

Hear more from Atau Tanaka at ataut.net

Further listening

More music by Atau and others at the cutting edge of performance control

ATAU TANAKA
LIVE AT IKLECTIK
Atau: "This is a live recording made at Iklectik in London, using my system with the Myo and Max. It also exists as a video, but we got a really high quality recording of that gig, and it was a real pleasure to be able to release it on Superpang which is a great label – I feel like the audio really does come to life on that release."

META GESTURE MUSIC
This anthology features musicians who crossed paths during Meta Gesture Music, a European research project which ran between 2012–17, exploring gesture in musical performance. The compilation features Atau Tanaka, composer/pianist Sarah Nicolls, Tom Richards performing on his Mini-Oramics light-sound instrument, Kaffe Matthews making music with sharks in the sea, xname amplifying electromagnetic fields, Laetitia Sonami, Leafcutter John, Renick Bell and Steph Horak, Dane Law, and Ewa Justka.

THE LADY'S GLOVE
Laetitia Sonami is a French artist who resides in San Francisco, and appears on the Meta Gesture compilation mentioned above. She created the Lady's Glove, a wearable controller which allows movement to shape sound and visuals. She also created the Spring Spyre, which can be seen in the photo. This is a circular metal ring which uses three pickups and thin metal springs to generate audio signals. The instrument uses machine learning to control sound synthesis in real-time and makes use of Rebecca Fiebrink's Wekinator software.

Audiotent

Nitrate

from $55

Amazing set of 107 expertly-crafted presets for Knifonium – Knif Audio's whopper monophonic vacuum tube-powered synth. They've rolled up their sleeves and got elbows deep in the guts of this one, pulling out monster basses, fierce top lines, and a whole host of other meaty keys, pads, tones and timbres.

Everything you hear is warm to the ear, and each big, bold, bouncy and beautiful sound will have you grinning like a kid in some kind of store. There's also plenty of bite to this collection, with some savage saturation and distortion textures to choose from. But, you'll need the Knifonium plugin to enjoy these presets. And, if you have the extra coin, you'll wanna upgrade to the Deluxe kit for MIDI and WAV files.

Roy Spencer

audiotent.com

Loopmasters

Terraform Drum & Bass

$36.50

Break new ground on this bountiful batch of DnB building blocks. The smart-as-a-whip selections nod respectfully to pioneers of the breakbeat science and sage sound designers like Photek and Amon Tobin. And everything in this near 500MB pack will work out your body and mind, as you chop and layer these cerebral club grooves into your own signature shapes.

The atmospheric hits, liquid loops, and sick sampler patches work best running between more trad jungalistic tempos of 160bpm to 174bpm. But, you can ignore that advice, and stretch and slice the sounds into more downtempo and trip-hoppy territories, if required. **loopmasters.com**

Loopmasters

Lovers Rock & Dub 2

$36.50

Another fantastic collection of classic Caribbean content, rooted firmly in the sizzling sub-genre of reggae known as lovers rock. Fans of this series will know what to expect, as you get all the Studio One-quality loops and hits needed to evoke this nostalgic flavor, in another well-stocked sample pack. Once inside, you'll be greeted with some serious deep bass business and steady rocking drum work, joining forces with a whole gang of skanking guitar playing, keys, brass, and dub-primed percussion grooves. The tempos build from 85-130bpm, and these sounds hold the fort firmly in their intended style, but will work a treat woven into more future-forward flexes too. **loopmasters.com**

Montage by Splice

Cinematic Vocals

From $7.99/month

Ghostly warbles, dreamy harmonies, airy high notes fly skywards in this collection of stacked and singular vocal performances. Beautiful paddy textures swing and soar, with moods ranging from sad to joyous caught in the booth. It's a perfect pack for gracing your soundtrack work, classy EDM tracks, or anything else needing a high-end choir crew's golden tones adding to it.

The 102 loops and 90 one-shots of expressive human voice in this set have been precisely and crisply recorded, and come in dry or wet versions, offering up a supremely useful library of emotionally-charged and cinematically-minded male and female melodies, drones, notes, and chorus swells. **splice.com**

Sample Magic

Fundamental IDM

From $7.99/month

Flashback pack of ambient electronica, inspired by the golden era of 2000's melodic majesty. The housey beats and techno treats here come on strong, via 200+ loops and 150 one-shots, with presets, music kits, MIDI, and stemmed tracks backing them up. Tonally deep and dusty, with woozy/moody grooves to the fore. Pull up glitchier and grainer sounds, if you like a little more decay and distress to your tracks. Or keep it less lucid, as you trawl through the drifty and dreamier side. These kinds of abstract and experimental sounds will never really go out of fashion tasteful takes on the decades' old trends, providing a treasure trove of nostalgic textures to wallow in, once more. **splice.com**

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